Oct. 27, 1953 R. L. TOMLIN 2,656,738

PULPWOOD SAW GRINDER

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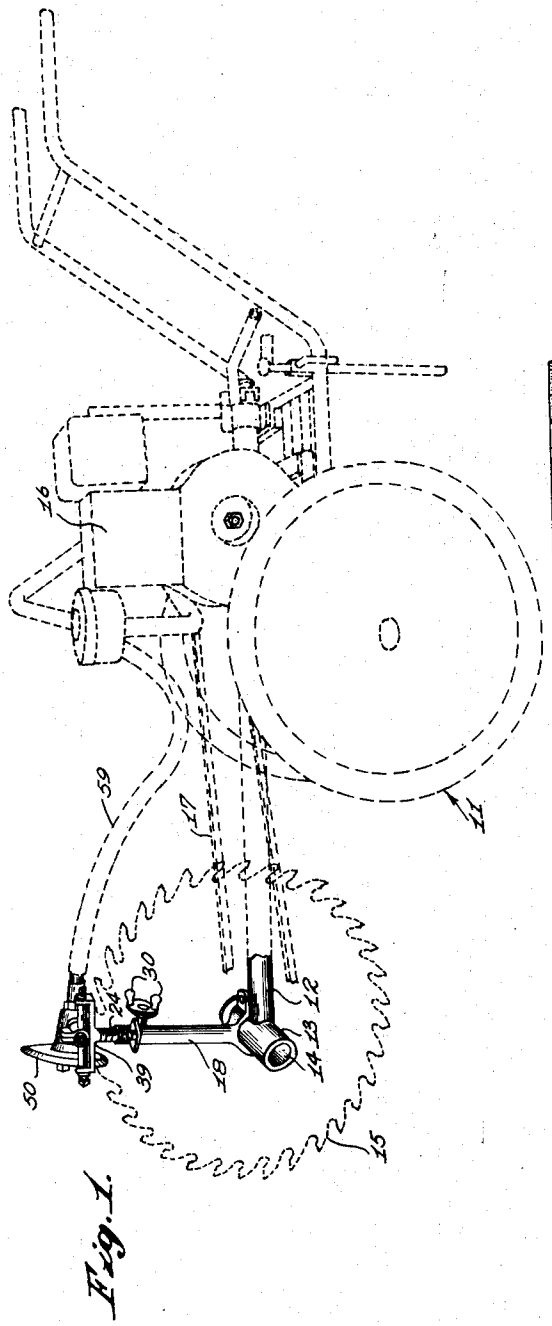


Fig. 1.

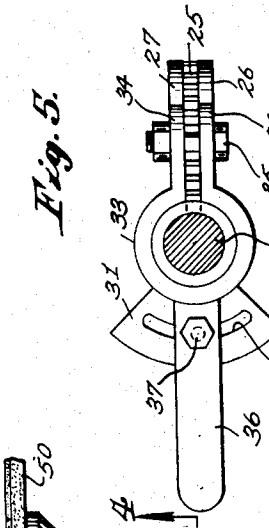


Fig. 5.

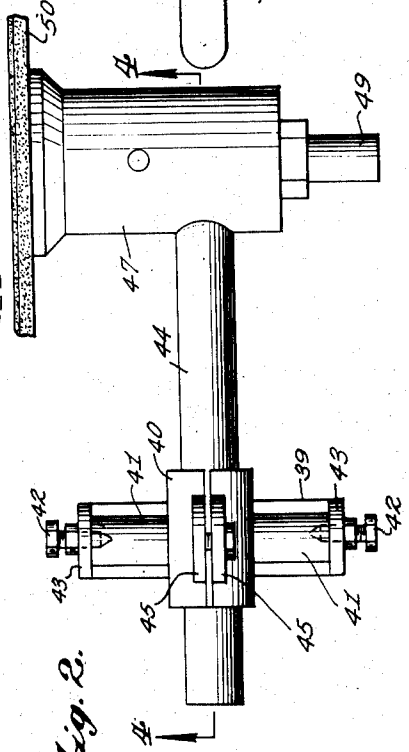


Fig. 2.

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Fig. 3.

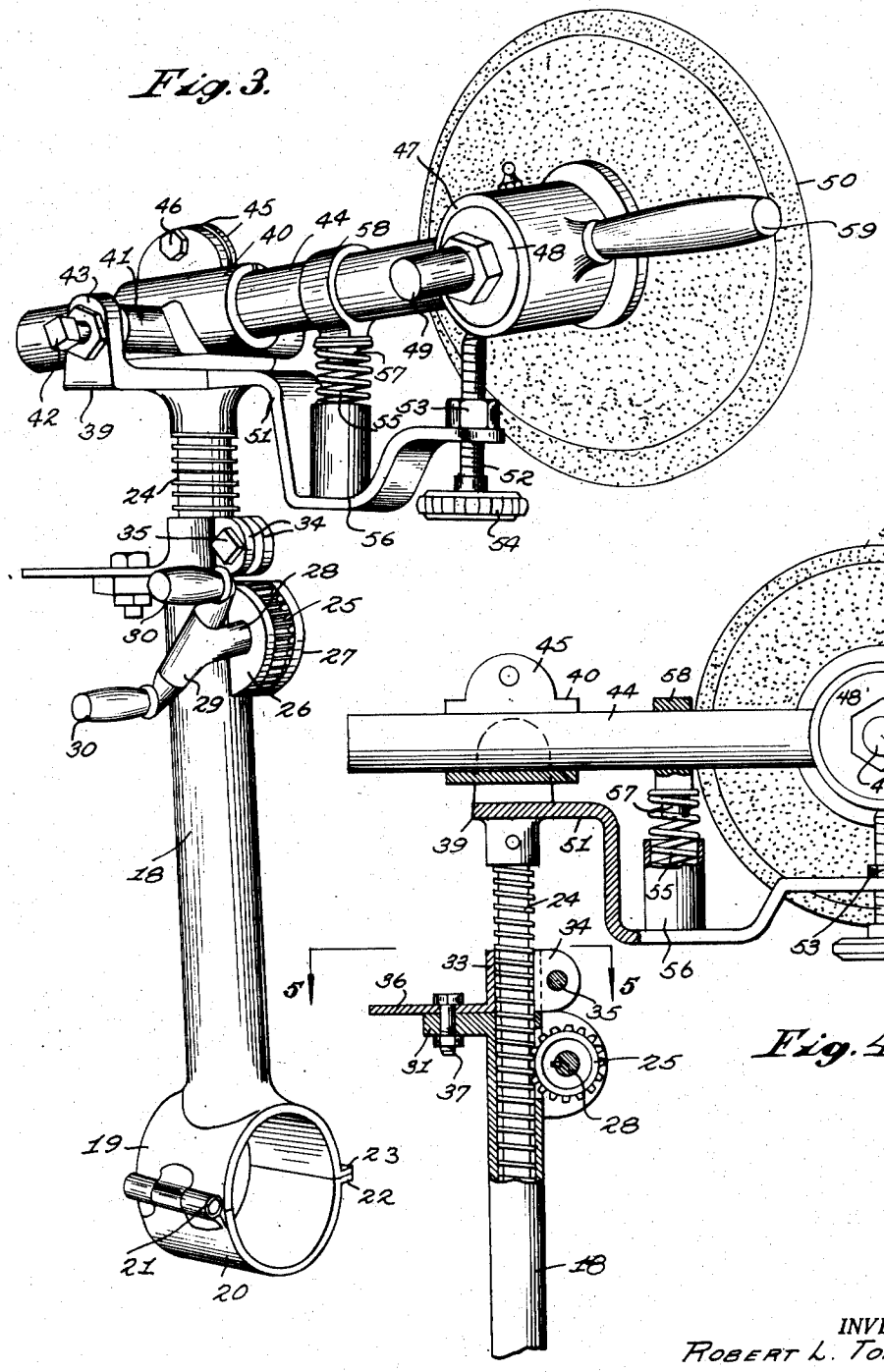


Fig. 4.

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PULPWOOD SAW GRINDER

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4 Claims. (Cl. 76—37)

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This invention relates to saw-sharpening devices, and more particularly to a sharpening attachment for use on portable rotary power saws.

A main object of the invention is to provide a novel and improved blade-sharpening attachment for use on a power-driven saw, such as a pulpwood saw, said attachment being simple in construction, being easy to mount on a standard power-driven saw, being easy to operate and providing accurate sharpening of the teeth of the saw with which the attachment is used.

A further object of the invention is to provide an improved blade-sharpening attachment for a portable power-driven rotary saw, such as a pulpwood saw or the like, said attachment involving relatively few parts, being sturdy in construction being easy to adjust, being usable without requiring the blade to be sharpened to be removed from the saw, and providing more accurate sharpening of a saw blade than is obtainable by hand filing.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a perspective dotted view of a conventional power-driven pulpwood saw having an improved blade-sharpening attachment, shown in full line view installed thereon;

Figure 2 is an enlarged, fragmentary, top plan view of the blade-sharpening attachment shown in Figure 1;

Figure 3 is a perspective view of the blade-sharpening attachment of Figures 1 and 2;

Figure 4 is a cross-sectional, detail view taken on line 4—4 of Figure 2;

Figure 5 is an enlarged, cross-sectional, detail view taken on line 5—5 of Figure 4.

Referring to the drawings, 11 generally designates a conventional pulpwood saw of the type having a forwardly extending frame member 12 to the end of which is transversely secured a sleeve or bearing member 13 in which is journaled a shaft or mandrel 14 on which the blade 15 is secured. Designated at 16 is a gasoline engine whose crankshaft is coupled to the shaft 14, as by a belt 17 and suitable pulleys, not shown, provided on the motor crankshaft and on the shaft 14.

The blade-sharpening attachment comprises a tubular standard 18 provided at its lower end with a clamping sleeve adapted to embrace the sleeve member 13 and rigidly secure the standard 18 thereto in the manner shown in Figure 1. Said clamping sleeve may comprise an upper

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segment 19 integral with the standard 18 and a lower segment 20 hinged to one margin of segment 19 and secured to the opposite margin of segment 19 by a clamping bolt extending through respective flanges 22 and 23 provided on segments 20 and 19.

Designated at 24 is a screw member which is slidably and rotatably received in the tubular standard 18. Designated at 25 is a gear journaled between parallel supporting lugs 26 and 27 formed on standard 18, said standard being slotted between the lugs 26 and 27, whereby the gear 25 projects inside the standard and meshes with the screw member 24. The shaft of the gear 25 is shown at 28, said shaft extending through the lug 26 and being formed at its end with the transverse bar 29 provided with the respective handles 30, 30, as shown in Figure 3.

The top end of the tubular standard 18 is formed with a horizontal flange 31. Flange 31 is formed with an arcuate slot 32 concentric with the axis of the tubular standard 18. Designated at 33 is a clamping collar surrounding the screw member 24 and provided with respective parallel lugs 34, 34 through which is engaged the clamping bolt 35 adapted to secure the lugs 34, 34 together and to cause the clamping collar 33 to exert clamping pressure on the screw member 24. Collar 33 is formed with a horizontal arm 36 which extends over the flange 31 and which carries the bolt 37 engaged through slot 32, as shown in Figure 5, whereby the arm 36 may be clamped to the flange 31. It will be apparent that the vertical position of the screw member 24 may be adjusted by loosening the clamping screw 35 and rotating the gear 25 by means of the handles 30, 30, the screw member 24 being locked in its adjusted vertical position by tightening the bolt 35. It will be further apparent that the screw member 24 may then be adjusted around its axis by loosening the bolt 37 and rotating the clamping collar 33 with the screw member 24 clamped therein. Rotation of the arm 36 causes the bolt 37 to move through the arcuate slot 32. The arm 36 may be clamped in a desired position of adjustment relative to the flange 31 by tightening the bolt 37. It will be apparent that the above-described structure provides both vertical adjustment of the screw member 24 and angular adjustment of said screw member around it own axis.

Designated at 39 is a yoke member which is rigidly secured to the top end of the screw member 24. Designated at 40 is a clamping sleeve formed with the laterally extending, opposed

bearing lugs 41, 41 which are respectively engaged at their ends by pivot screws 42, 42 threaded through and locked to the upstanding arms 43, 43 of the yoke member 39. Designated at 44 is an arm which is received in the clamping sleeve 40. Sleeve 40 is provided with upstand parallel marginal lugs 45, 45 through which extends a clamping screw 46, whereby the arm 44 may be clamped in the sleeve 40 in any desired position of angular adjustment around its own axis. The end of arm 44 has secured thereto a bearing sleeve 47 in which is journaled an arbor 48 in which is axially secured the shaft 49. Secured to shaft 49 is the emery grinding disc 50.

Designated at 51 is an arm integral with the yoke member 39 and extending therefrom in underlying relation with respect to the arm 44. Threaded through the end of arm 51 is a stop screw 52 whose top end underlies the bearing sleeve 47. Screw 52 is provided with a lock nut 53 and with an adjusting handle or knob 54. Designated at 55 is a coil spring whose lower end is seated in a cup member 56 carried by the arm 51 and whose upper end engages around a depending lug 57 formed on a collar 58 clamped to the arm 44. The spring 55 biases the arm 44 upwardly, and the stop screw 52 limits downward movement of the bearing sleeve 47. Designated at 59 is a radially projecting handle carried by the bearing sleeve 47, whereby the bearing sleeve and the grinding disc 50 journaled thereto may be manually depressed. It will be apparent from the above description that the angular position of the grinding disc 50 may be varied by loosening the clamping screw 46 and rotating the arm 44 around its own axis in the clamping sleeve 40. It will be further apparent that the distance of the grinding disc 50 from the axis of the pivot screws 42, 42 may be slightly adjusted by moving the arm 44 axially in the clamping sleeve 40 prior to tightening the clamping screw 46.

In using the device, the standard 18 is clamped to the bearing sleeve 13 of the frame of the power saw, in the manner shown in Figure 1, whereby the grinding wheel 50 will be arranged adjacent the periphery of the saw blade 15. The end of the shaft 49 is connected by a flexible coupling shaft, shown in dotted view at 59, to the crankshaft of motor 16 either directly or through a suitable shaft and pulley arrangement. The clamping segments 19 and 20 secure the entire attachment in an upstanding position, such as that shown in Figure 1.

The first step in the blade-sharpening process consists of striking or jointing the teeth of the blade. To accomplish this, the clamping screw 35 is first loosened and the grinding blade 50 is elevated by rotating the handles 30, 30 until the wheel 50 is about three inches above the top of the saw teeth. The screw 35 is then tightened. The lock nut 53 is then loosened and the screw 52 is then set to a position wherein the grinding wheel 50 may be depressed sufficiently to engage all the points of the saw blade teeth. The lock nut 53 is then tightened and the engine is started. The grinding wheel 50 is depressed by means of a handle 59, the saw blade 50 being, of course, uncoupled from the engine 16 to allow the blade to be manually rotated. With the grinding wheel 50 in its depressed position, the blade 15 is slowly rotated clockwise, as viewed in Figure 1, by hand until all of the points of the blade teeth have been struck, whereby the saw teeth are of equal radial distance from the blade axis.

After the teeth have been struck, as above described, the motor is stopped and the clamping screw 46 is loosened. The arm 44 is rotated so that the wheel 50 is adjusted to the desired tooth-hook angle. After the blade 50 has been adjusted to said desired tooth-hook angle, the clamping screw 46 is tightened. The lock nut 53 is then loosened and the stop screw 52 is lowered to provide the desired grinding depth of the emery wheel 50. The said grinding depth will be in accordance with the desired length of saw teeth. When the screw 52 has been set to the desired stop position, the lock nut 53 is tightened. The motor is then started and the saw teeth are "gummed" up to the points that were "struck off" in the preceding stage of the operation.

After the saw teeth have been "gummed," the bolt 37 is loosened and the screw member 24 is rotated by means of arm 36, so as to provide the desired sharpening angle of the emery wheel 50. When the desired sharpening angle has been obtained, the bolt 37 is tightened to lock the clamping collar 33 in the correct position for providing said desired sharpening angle. When the sharpening angle has been set, as above described, the teeth may be beveled by grinding the face of one tooth and the back of the next adjacent tooth. For beveling from the opposite side of the saw blade, the same procedure is used, except that the grinding wheel is turned in the proper direction to provide beveling for said opposite side of the saw blade.

While a specific embodiment of an improved blade-sharpening attachment for rotary power saws has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. A blade-sharpening attachment, comprising a tubular standard, means on said standard clampingly engageable with the frame of a circular saw adjacent to the rotary saw blade, a rack bar slidably disposed in said standard, a manually rotatable gear journaled on said standard and meshing with said rack bar, a clamp on said standard lockingly engageable with said rack bar, a yoke member at the end of said rack bar, an arm pivoted in said yoke member, a grinding wheel rotatably mounted on the end of said arm, and a flexible shaft connected to said grinding wheel, said shaft being adapted to be connected to a source of power.

2. A blade-sharpening attachment, comprising a tubular standard, means on said standard clampingly engageable with the frame of a circular saw adjacent to the rotary saw blade, a rack bar slidably disposed in said standard, a manually rotatable gear journaled on said standard and meshing with said rack bar, a clamp on said standard lockingly engageable with said rack bar, a yoke member at the end of said rack bar, a sleeve pivoted in said yoke member, an arm disposed in said sleeve, means on said sleeve clampingly locking said arm, a grinding wheel rotatably mounted on the end of said arm, and a flexible shaft connected to said grinding wheel, said shaft being adapted to be connected to a source of power.

3. A blade-sharpening attachment, comprising a tubular standard, means on said standard clampingly engageable with the frame of a cir-

cular saw adjacent to the rotary saw blade, a rack bar slidably disposed in said standard, a manually rotatable gear journaled on said standard and meshing with said rack bar, a clamp on said standard lockingly engageable with said rack bar, a yoke member at the end of said rack bar, a sleeve pivoted in said yoke member, an arm disposed in said sleeve, means on said sleeve clampingly locking said arm, a projection on said yoke member extending beneath and adjacent to said arm, an adjustable stop member carried by said projection and being engageable by said arm to limit the downward movement thereof, spring means between the arm and the projection and biasing the arm upwardly, the grinding wheel rotatably mounted on the end of said arm, and a flexible shaft connected to said grinding wheel, said shaft being adapted to be connected to a source of power.

4. A blade-sharpening attachment, comprising a tubular standard, means on said standard clampingly engageable with the frame of a circular saw adjacent to the rotary saw blade, a rack bar having a circular cross-section slidably and rotatably disposed in said standard, a manually rotatable gear journaled on said standard and meshing with said rack bar, a clamp in said standard lockingly engageable with said rack bar, said clamp being arranged to be rotated around the axis of the standard, means locking said clamp in adjusted rotated position around said axis, a yoke member at the end of said rack bar, a sleeve pivoted in said yoke member, an arm disposed in said sleeve, means on said sleeve clampingly locking said arm, a projection on said yoke member extending beneath and adjacent to said arm, an adjustable stop member carried by said projection and being engageable by said arm to limit downward movement thereof, spring means between the arm and projection biasing the arm upwardly, a grinding wheel rotatably mounted on the end of said arm, and a flexible shaft connected to said grinding wheel, said shaft being adapted to be connected to a source of power.

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