Jan. 28, 1958 R. M. WEST ET AL 2,821,216

PORTABLE CHAIN SAW ATTACHMENT FOR CLEARING FIRE LANES OR THE LIKE

Filed Nov. 28, 1956 2 Sheets-Sheet 1

FIG. 1

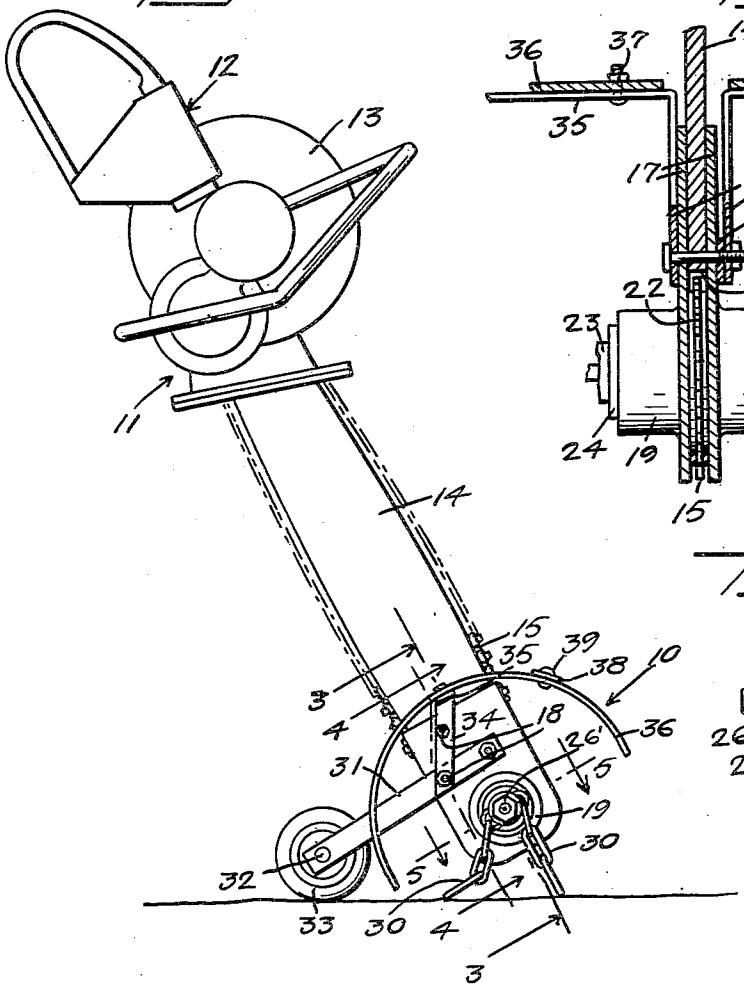


FIG. 4

FIG. 7

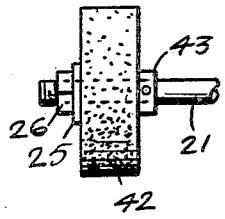


FIG. 5

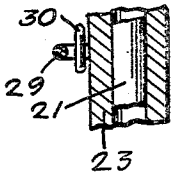
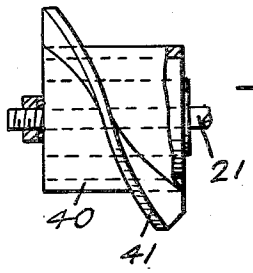


FIG. 6



INVENTORS
R.M.West
R.W.Steele

BY John N. Randolph
ATTORNEY

Jan. 28, 1958 R. M. WEST ET AL 2,821,216

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Filed Nov. 28, 1956 2 Sheets-Sheet 2

Fig. 2.

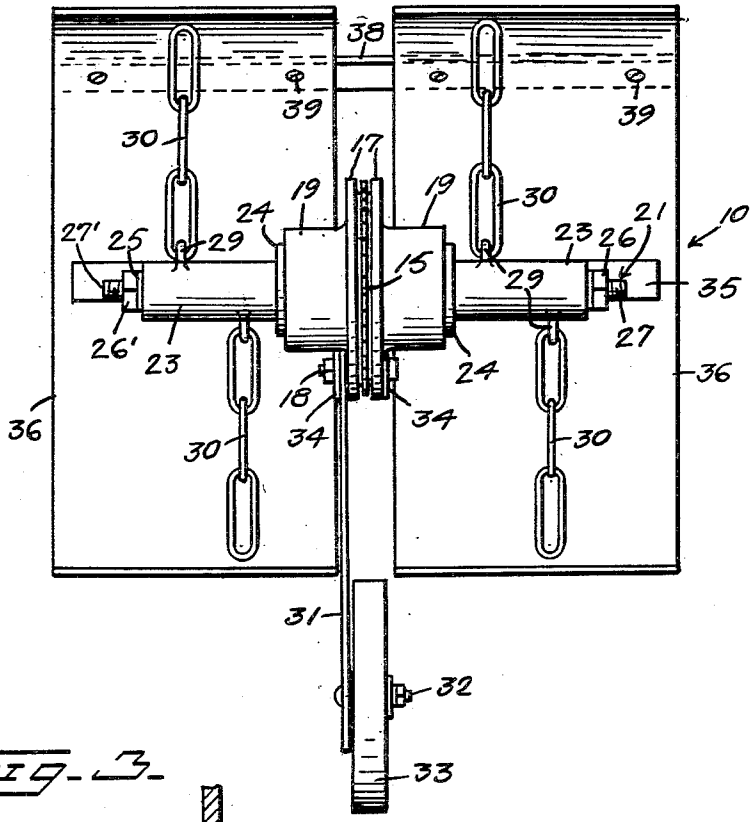
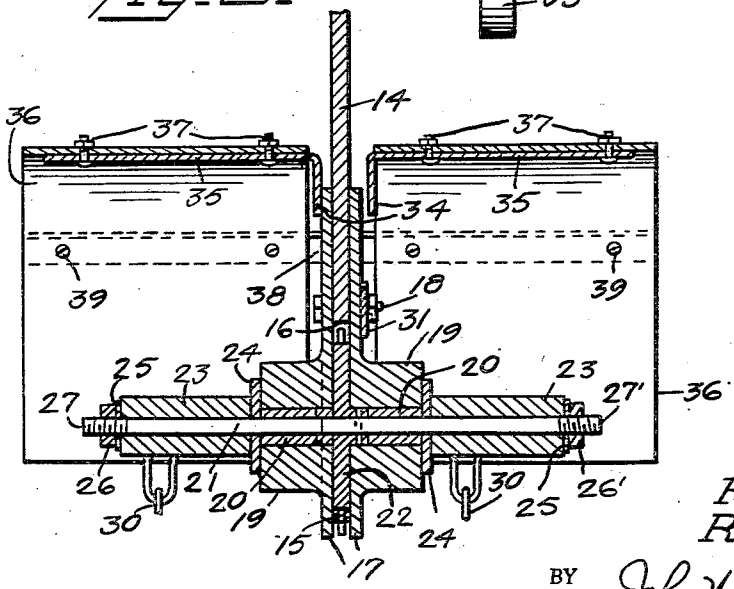


Fig. 3.



INVENTORS

R. M. West

R. W. Steele

BY John H. Randolph

ATTORNEY

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PORTABLE CHAIN SAW ATTACHMENT FOR CLEARING FIRE LANES OR THE LIKE

Raymond M. West, Anaconda, and Robert W. Steele, Missoula, Mont.

Application November 28, 1956, Serial No. 624,859

4 Claims. (Cl. 144—1)

This invention relates to an attachment for a portable power-driven chain saw and is primarily adapted to materially enhance the functional characteristics of the chain saw especially when utilized in connection with forest fire control, and forest trail construction and maintenance.

More particularly, it is an aim of the present invention to provide an attachment which will increase the mobility of a portable power chain saw so that it may be handled and conveyed more readily and which will enable the chain saw to perform additional functions other than its conventional cutting operation.

More particularly, it is an object of the present invention to provide an attachment by means of which fire control lines in the form of trenches can be dug by the attachment through ground cover and vegetation of different densities to the mineral soil to thereby construct fire lines for forest fire control.

A further object of the invention is to provide an attachment to enable the operator to utilize the chain saw with the attachment for either cutting or digging as obstacles are encountered in the construction of a fire line.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating presently preferred embodiments thereof, and wherein:

Figure 1 is a side elevational view showing a portable chain saw equipped with the attachment and disposed in a digging position;

Figure 2 is an enlarged end elevational view thereof looking toward the outer or forward side of the attachment and the outer or forward end of the chain saw;

Figure 3 is an enlarged fragmentary sectional view, taken substantially along a plane as indicated by the line 3—3 of Figure 1;

Figure 4 (Sheet 1) is an enlarged fragmentary sectional view, taken substantially along a plane as indicated by the line 4—4 of Figure 1;

Figure 5 is a fragmentary sectional view, on an enlarged scale, taken substantially along a plane as indicated by the line 5—5 of Figure 1;

Figure 6 is a fragmentary elevational view, partly in section, illustrating a modification of the attachment, and

Figure 7 is a fragmentary elevational view illustrating another modification of the attachment.

Referring more specifically to the drawings and first with reference to Figures 1 to 5, the chain saw attachment 10 is adapted to be mounted on a conventional portable power-driven chain saw such as illustrated at 11 in Figure 1 and which includes a frame 12 equipped with handles and which supports a prime mover 13 and the blade or bar 14. The blade or bar 14 extends from an inner end of the frame 12 and has the endless saw chain 15 trained therearound. The chain 15 is driven in a

conventional manner by the power source 13. The aforedescribed parts of the saw 11 are all of conventional construction with the exception that the outer end of the blade or bar 14 is recessed as seen at 16.

The attachment 10 which constitutes a digging attachment includes a pair of corresponding plates 17 the inner end portions of which straddle the outer end of the bar or blade 14 and are secured thereto by a plurality, preferably three nut and bolt fastenings 18 which extend through the blade 14 and the inner ends of the plates 17. The plates 17 have outer portions which project outwardly from the recessed end 16 of the blade 14 and which have aligned outwardly extending bosses 19 forming aligned bearing housings, each of which contains a sealed bearing 20. A shaft 21 has portions thereof journaled in the bearings 20. A sprocket wheel 22 is connected to the intermediate portion of the shaft 21 for rotation therewith and is disposed between the outer portions of the plates 17 and outwardly with respect to the recess 16, as seen in Figures 3 and 4. The outer or forward portion of the saw chain 15 is trained around the sprocket wheel 22 for driving said sprocket wheel and the shaft 21.

The shaft 21 has end portions extending outwardly in both directions from the bearings 20. A sleeve 23 is mounted on each end of the shaft 21 between two washers 24 and 25. The washers 24 are disposed between the inner ends of the sleeves 23 and the outer ends of the bearings 20 and the outer lock washers 25 are disposed between the outer ends of the sleeves 23 and retaining nuts 26 and 26'. The nuts 26 and 26' engage the threaded ends 27 and 27', respectively, of the shaft 21. The shaft end 27 and nut 26 are threaded in the opposite direction to the shaft end 27' and nut 26', and said shaft ends and nuts are threaded in directions so that when the shaft 21 is rotated in its normal direction of movement, clockwise as seen in Figure 1, rotation of the shaft 21 will tend to tighten the nuts 26 and 26'.

Each sleeve 23 is provided with longitudinally and circumferentially spaced outwardly projecting eyes or loops 29 to each of which is connected a flail 30. The flails 30 may be formed of any durable material which is capable of flexing. As shown, the flails 30 are each formed by a short length of chain.

An end of a standard 31 is secured to the outer side of one of the plates 17 by two of the fastenings 18, so as to be disposed substantially crosswise of the saw 11. The standard 31 extends downwardly from the outer end of the saw 11 and has a bolt 32, extending laterally from the other lower end thereof, which provides an axle on which a wheel 33 is journaled. The wheel 33 is disposed on the inner side of the lower end of the standard 31 and substantially directly beneath portions of the plates 17 and the outer end of the blade 14 to provide a ground engaging supporting wheel for the outer end of the saw 11, as best illustrated in Figures 1 and 2.

Supporting brackets 34 are mounted on the outer sides of the plates 17, each by a plurality of the fastenings 18. Said supporting brackets 34 extend beyond the inner ends of the plates 17 and have outturned ends 35 which are secured to the inner sides of guards 36 by fastenings 37. The guards 36 each comprise an elongated substantially semicircular rigid plate, which plates are disposed around and radially spaced from the shaft 21 and between said shaft and the inner end of the saw 11. The guards 36 are spaced a sufficient distance from the shaft 21 to clear the outer ends of the flails 30 when the shaft 21 is revolving and the flails 30 are held in extended positions by centrifugal force, as illustrated in Figure 2. The upper portions of the guards 36 are also braced relative

to one another by a crossbar **38** which is disposed above the saw chain **15** and which has its ends secured by fastenings **39** to the two guards **36**.

From the foregoing it will be readily apparent that the wheel **33** can be utilized to support a substantial part of the weight of the power saw **11** and attachment **10** while transporting the saw, which can be pulled or pushed by the operator while grasping one or more of the handles of the frame **12**. Also, when the saw **11** is in operation the chain **15** will be driven by the motor **13** in a direction so that the upper flight thereof is moving away from the frame **12** for turning the sprocket wheel **22** and shaft **21** clockwise as seen in Figure 1. Accordingly, by positioning the saw **11** of the attachment **10** at an incline as illustrated in Figure 1, it will be readily apparent that the flails **30** can be utilized for cutting through vegetation and other growths to form trenches in the soil and which will provide effective fire lines for forest fire control. The flails **30** are shown in Figure 1 as they will appear when the shaft **21** is not being revolved. However, when the shaft **21** is rotating the flails will be urged toward extended positions by centrifugal force and will assume substantially the positions as shown in Figure 2, which illustrates the attachment **10** as it will appear in operation. It will also be apparent that the saw **11** can be utilized for cutting through logs, brush and other obstructions with the attachment **10** applied thereto, by merely swinging the saw **11** counterclockwise from its position of Figure 1 about the axle **32** as a pivot to position the bottom flight of the chain **15** in a cutting position.

Figure 6 illustrates a slightly modified form of the digging means and wherein the sleeve **23** is replaced by a drum **40** which can be secured on the shaft **21** in the same manner as the sleeves **23**. The drum **40** is of considerable diameter and has a spiral cutting blade **41** extending substantially therearound and projecting outwardly therefrom which will function when the drum **40** is revolved and the blade **41** is in contact with the ground for cutting a trench. It will be understood that a drum **40** having the blade **41** is mounted on each end of the shaft **21**.

One or both ends of the shaft **21** may also be utilized for detachably mounting a grinding wheel **42** which may be clamped between a collar **43** which is detachably secured to the shaft **21** and one of the lock washers and nuts, as seen at **25** and **26** in Figure 7. The grinding wheel **42** may be effectively employed for sharpening tools when other means for accomplishing this result are not available while fighting a forest fire.

Various other modifications and changes are contemplated and may be resorted to, without departing from the function or scope of the invention as hereinafter defined by the appended claims.

We claim as our invention:

1. In combination with a portable power-driven chain saw including an elongated blade and an endless saw chain disposed for movement around said blade; a chain saw attachment comprising bearing means secured to an outer portion of said blade and extending outwardly therefrom, a shaft journaled in said bearing means and disposed crosswise of the blade, a sprocket wheel fixed to the shaft substantially in alignment with the blade and beyond the outer end of the blade, said saw chain being trained around said sprocket wheel for driving the sprocket wheel and shaft, sleeves secured to end portions of the shaft on opposite sides of the bearing means, flails connected to said sleeves for digging fire control trenches when the sprocket wheel and shaft are revolved by movement of the saw chain, a standard having an end fixed to an inner portion of said bearing means and disposed crosswise thereof and of the blade, a ground engaging wheel disposed on one side of the other end of said standard, and an axle extending laterally from said last mentioned standard end for journaling said wheel and for positioning the wheel beneath said bearing means and substantially in the plane of the blade, said standard being disposed between the flails of the two sleeves and said ground engaging wheel being adapted to engage the ground for supporting the chain saw at an incline and with the attachment disposed so that the flails thereof will contact the ground when revolved.

2. In combination with a portable power-driven chain saw including an elongated blade and an endless saw chain disposed for movement around said blade; a chain saw attachment comprising bearing means secured to an outer portion of said blade and extending outwardly therefrom, a shaft journaled in said bearing means and disposed crosswise of the blade, a sprocket wheel fixed to the shaft substantially in alignment with the blade and beyond the outer end of the blade, said saw chain being trained around said sprocket wheel for driving the sprocket wheel and shaft, sleeves secured to end portions of the shaft on opposite sides of the bearing means, flails connected to said sleeves for digging fire control trenches when the sprocket wheel and shaft are revolved by movement of the saw chain, substantially semicircular guards disposed on opposite sides of the blade and bearing means and adjacent the inner end of the bearing means, and brackets supported by said bearing means and secured to said guards for mounting said guards partially around and substantilly concentricly of the end portions of said shaft and spaced from said shaft ends a sufficient distance to clear the extended flails, said guards being disposed between the flails and the opposite end of the chain saw.

3. In combination with a portable power-driven chain saw including a power source, supporting handles, an elongated blade, and a driven endless saw chain disposed for movement around and guided by said blade, said blade having an outer end disposed remote from the supporting handles and power source; a chain saw attachment comprising bearing means secured to said blade and extending beyond the outer end thereof, a shaft journaled in said bearing means and disposed crosswise of the blade, a sprocket wheel fixed to said shaft and disposed substantially in alignment with the blade and beyond the outer end thereof and around which the saw chain is trained for driving the sprocket wheel and shaft, and rotary scarifying means fixed to said shaft, said rotary scarifying means comprising rotary diggers fixed to the shaft on opposite sides of said bearing means, a wheel standard fixed to and extending from said bearing means and disposed crosswise of the longitudinal axis of said blade, and a ground engaging wheel rotatably mounted on said standard beneath and spaced from said bearing means and providing a one wheel mobile support for the attachment and an end of the chain saw and about which the saw and attachment can be rocked for moving the scarifying means into and out of a position for contacting the ground.

4. In combination with a portable power-driven chain saw including a power source, supporting handles, an elongated blade, and a driven endless saw chain disposed for movement around and guided by said blade, said blade having an outer end disposed remote from the supporting handles and power source; a chain saw attachment comprising bearing means secured to said blade and extending beyond the outer end thereof, a shaft journaled in said bearing means and disposed crosswise of the blade, a sprocket wheel fixed to said shaft and disposed substantially in alignment with the blade and beyond the outer end thereof and around which the saw chain is trained for driving the sprocket wheel and shaft, and rotary scarifying means fixed to said shaft, said rotary scarifying means comprising rotary diggers fixed to the shaft on opposite sides of said bearing means, a wheel standard fixed to and extending from said bearing means and disposed crosswise of the longitudinal axis of said blade, and a ground engaging wheel rotatably mounted on said standard beneath and spaced from said bearing means and providing a one wheel mobile support for the attachment and an end of the chain saw, substantially semicircular guards disposed

around and radially spaced from the end portions of said shaft and disposed between the shaft and the handle and power source of the chain saw, and mounting brackets secured to the bearing means and to said guards for rigidly supporting the guards relative to said bearing means and blade.

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