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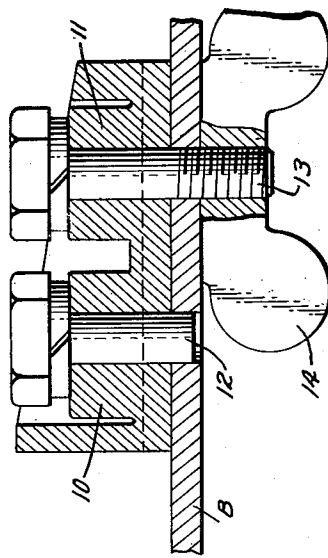
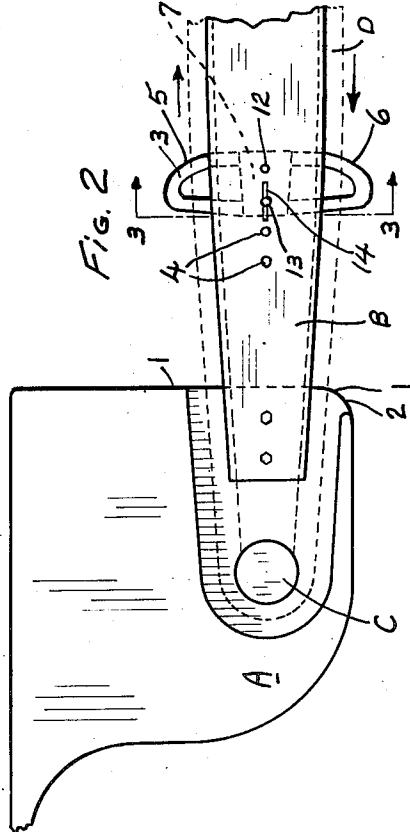
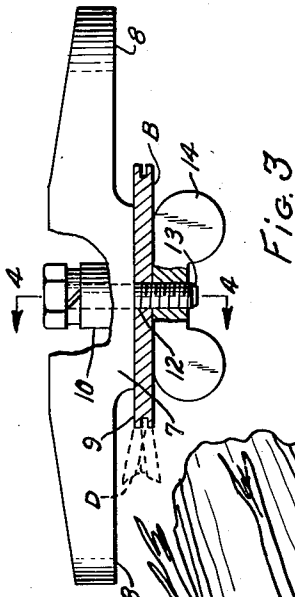
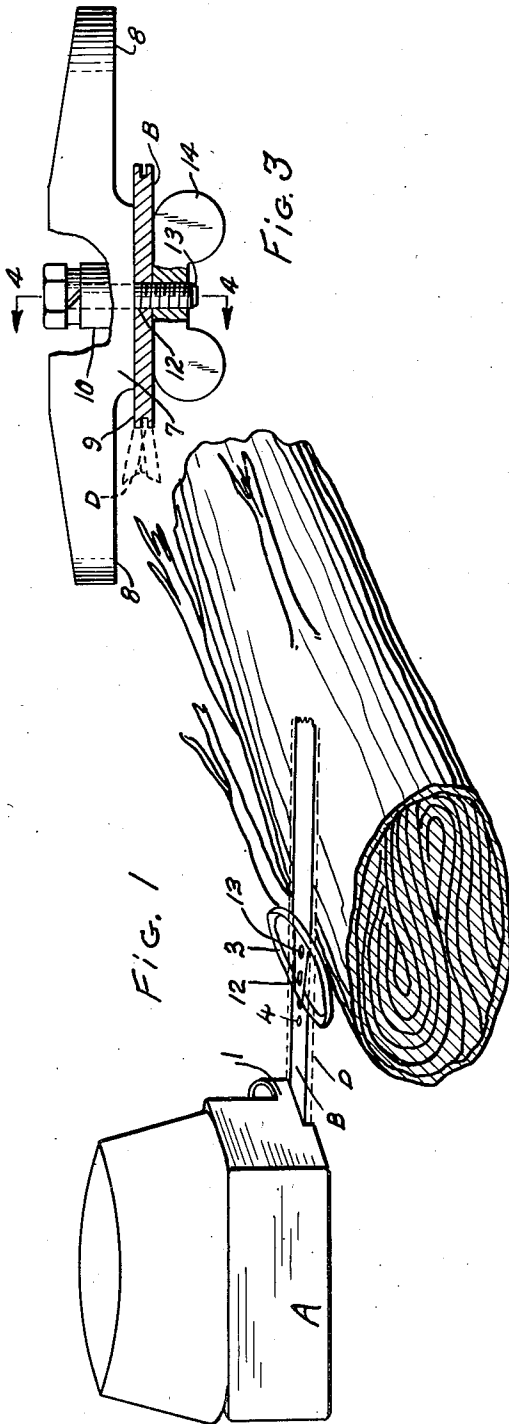
A. W. MALL ET AL

2,567,886

ADJUSTABLE BUMPER ATTACHMENT FOR CHAIN SAWS

Filed Sept. 18, 1944

2 Sheets-Sheet 1



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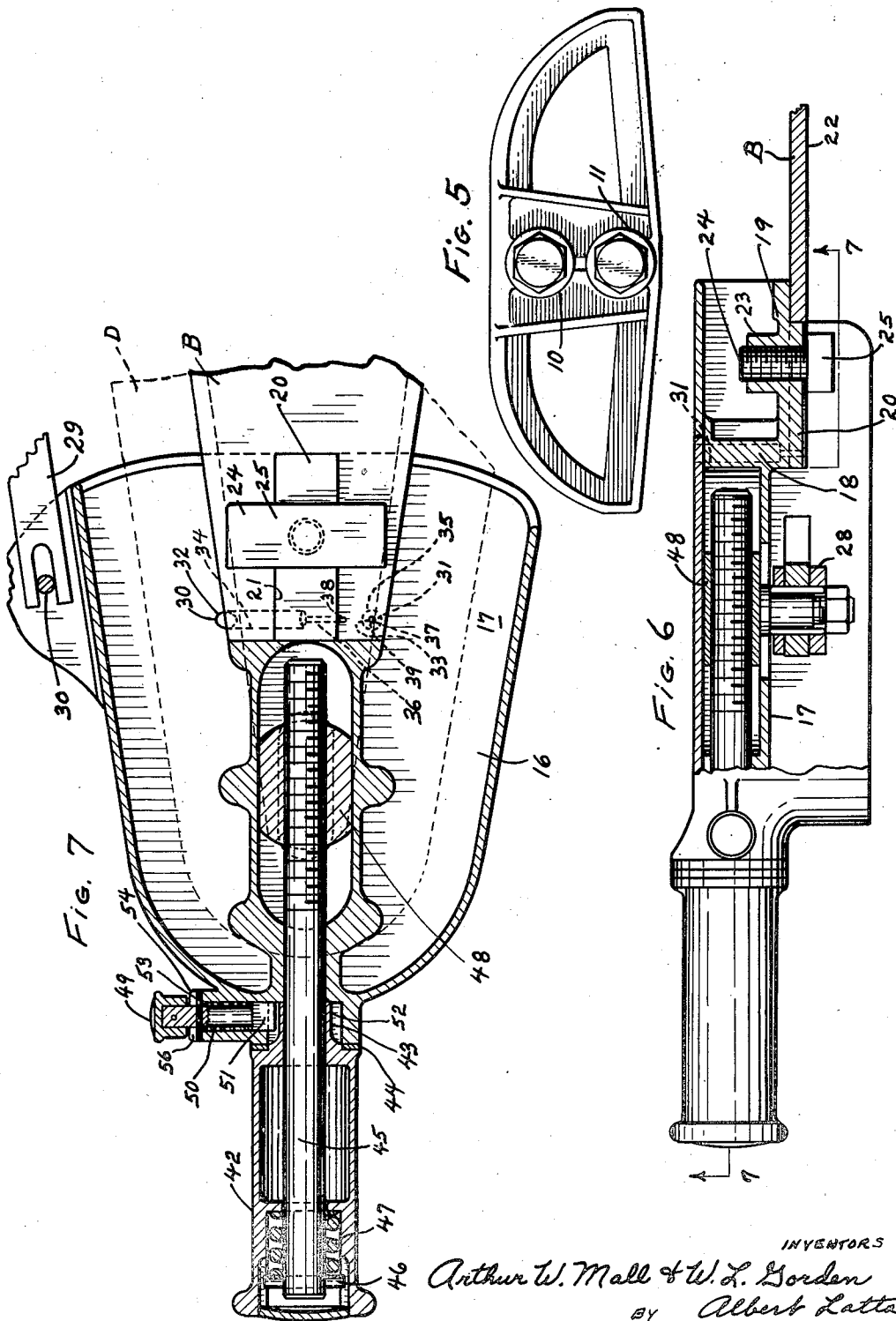
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ADJUSTABLE BUMPER ATTACHMENT FOR CHAIN SAWS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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ADJUSTABLE BUMPER ATTACHMENT FOR
CHAIN SAWS

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1 Claim. (Cl. 143—32)

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Our invention relates to chain saw machines and has as its general object the provision of an improved chain saw machine.

One object of our invention is to provide improved, yet simple, chain tension adjusting means.

Another object is to provide means for quickly removing the idler casting from the end of the chain guiding member to permit the chain guiding member and cutting chain to be pulled through a kerf being cut.

A further object is to provide a removable auxiliary bumper bracket to assist in "limbing" operations.

Further objects and advantages of our invention will be apparent upon reading the specification and upon examination of the drawings in which:

Fig. 1 is a perspective view of our chain saw machine showing the auxiliary bumper as used in limbing operations;

Fig. 2 is a side elevation of our chain saw machine showing the auxiliary bumper from the underneath side;

Fig. 3 is a fragmentary view of the auxiliary bumper bracket taken on line 3—3 of Fig. 2;

Fig. 4 is a fragmentary sectional view of the auxiliary bumper bracket taken on line 4—4 of Fig. 3;

Fig. 5 is a top view of the auxiliary bumper bracket alone;

Fig. 6 is a side elevation showing partially in section the idler sprocket assembly and chain tension adjusting means at the end of the chain guiding member opposite the power unit; and

Fig. 7 is a sectional view taken on line 7—7 of Fig. 6.

It has been customary in the prior art to provide chain saw machines with bumper guards which are permanently secured to the power unit, against which guards the log being cut rests during the cutting operation. The diameter of a log which a chain saw machine is capable of cutting is determined by the span between this bumper guard and the guard on the opposite end of the chain guiding member. It is desirable to have the bumper guards at each end of the chain saw machine spaced as far apart as possible so that the chain saw machine will be capable of cutting as large a diameter log as possible. However, when the bumper guard is secured to the power unit, frequently the power unit hinders certain types of cutting operations, particularly limbing.

Referring to Figs. 1 and 2, we have shown our chain saw machine which is comprised generally of a power unit A, a chain guiding member B, a driving sprocket C and a cutting chain D.

In our chain saw machine we obtain maximum

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diametric cutting capacity by forming the permanent bumper guard 1 integral with the power unit. When cutting a tree or log, the cutting chain D travels in the direction indicated in Fig. 2, consequently when the cutting chain engages the log or tree, it pulls the entire chain saw machine in a direction in which the power unit A is pulled against the tree. The bumper guard 1 is therefore continuously urged against the outer surface of the tree while the cutting chain is progressing through the tree. The arcuate surface 2 of the bumper guard 1 prevents pinching while the cutting chain is progressing through the tree. When it is desired to cut the branches from a tree which has been felled, it is frequently necessary to insert the cutting chain underneath the fallen tree. In cutting these underneath branches, it is necessary that the power unit be spaced away from the tree so as not to become jammed beneath the tree. We have thus provided an auxiliary bumper guard 3, which may be quickly attached and removed from the chain guiding member when it is desired to cut branches from a tree. We have provided a number of holes 4, in the chain guiding member B, which holes may be spaced at an equal distance from each other so that the bumper guard 3 may be attached in any of several positions along the guiding member.

The bumper guard 3 consists of a casting having arcuately shaped front surfaces 5 and 6 and a central portion 7 which provides a bearing surface for the guiding member B. It will be noted that the bearing surface 7 protrudes outwardly and away from the underneath surface 8 of the bumper guard, thereby providing clearance space between the face 9 of the chain guide member B and the underneath surface 8 of the bumper guard 3. The reason for this is to permit the cutting chain D to travel around the guide member B past the bumper guard 3 without scraping against the underneath surface 8 of the bumper guard. The bumper guard is provided with a pair of bosses 10 and 11 through which a pair of bolts 12 and 13 extend. These bolts are inserted through the bosses by pressed fit so as to be rigid therewith and non-rotatable therein. The bolt 12 extends beyond the underneath surface of bearing portion 7 just sufficiently far so as to extend into the hole 4 in guide member B, but not all the way through said hole. Bolt 12 merely serves to locate the bumper guard 3 in correct position and in cooperation with bolt 13 prevents the bumper guard from rotating relative to guide member B. Bolt 13 extends through hole 4 and has a threaded portion protruding to the other side of the guide member. Wing nut 14 removably secures the bumper guard 3 to the guide

member B. It can be seen that the bumper guard 3 can be quickly attached and detached from the chain guide member.

Referring to Figs. 6 and 7, we have shown our improved chain tension adjusting device and our novel device for quickly removing the idler casting from the chain guide member.

The main casting 16 is provided with a web portion 17 which extends transversely across the casting. Formed integral with the web portion 17 is a downwardly depending wall portion 18 and an outwardly extending wall portion 19 against which the guide member B rests. The wall portion 19 has an outwardly protruding rectangular shaped lug member 20, which is received in the elongated slot 21 in the end of the chain guide member B. On either side of the lug member 20 the wall portion 19 provides flat bearing surfaces for chain guide member B to rest against. It will be noted that the plane defined by the lower surface of the lug member 20 is slightly above the plane defined by the outer surface 22 of guide member B, the reason for which will be hereinafter described. Wall portion 19 has an internally threaded boss 23 which receives the threaded end of bolt 24. Bolt 24 has a rectangularly shaped head portion 25 with a flat underneath surface for bearing against guide member B securing said guide member B to casting 16. It is significant to note that the threads on bolt 24 are coarse so that the bolt moves inwardly rapidly and when the head portion 25 is parallel lengthwise with slot 21, the side walls of head portion 25 do not sink into slot 21 just prior to the time that head portion 24 becomes tightened against guide member B. The width of head portion 25 is slightly less than the span of slot 21, consequently, when bolt 24 is loosened the head portion 24 may be pushed downwardly through the slot 21 when it reaches lengthwise alignment with said slot. When head portion 24 is pushed through slot 21 beyond the opposite face of guide member B the casting 16 may be pushed forwardly relative to guide member B and then the cutting chain drops away from sprocket 28. Then the guide member and cutting chain can be withdrawn through the kerf of the log being cut with nothing to obstruct its withdrawal.

Guard bar 29 may be sprung outwardly away from bolt 30 when pushing casting 16 forwardly relative to guide member B. The wall portion 18 in casting 16 is of sufficient thickness to accommodate a pair of lubrication passages 30 and 31. Both of these passages open into the upper outside surface at 32 and 33 of web portion 17 where the oil for the cutting chain is introduced. The upper ends of these passages have enlarged regions 34 and 35 which serve as reservoirs to hold a quantity of oil for a limited amount of time. The lower ends of the passages 30 and 31 have restricted regions 36 and 37 which open into the outer surface of wall portion 19 at 38 and 39.

These restricted regions permit only a limited amount of oil to drop onto the chain occasionally. It will be noted that passage 30 extends through casting 16 in a diagonal direction whereas passage 31 extends through casting 16 perpendicularly to the plane of the cutting chain. This permits oiling the cutting chain in its two normal cutting positions; felling and bucking. Referring to Fig. 7, we have shown our machine in bucking position. Passage 30 is used to oil the cutting chain when in bucking position and passage 31 is used for oiling the cutting

chain when the machine is in felling position as shown in Fig. 6.

In order to accomplish adjustment of chain tension, we have provided handle 42 which is rotatably received in the outer end of casting 16 by means of shaft portion 43. A thrust washer 44 is interposed between the handle 42 and the end of casting 16 to provide additional wearing life. A rod 45 extends through handle 42 and is keyed thereto by means of a pin 46 so as to be rotatable along with handle 42. A compression spring 47 normally urges the handle 42 against casting 16 maintaining handle 42 and casting 16 together as a unit. Rod 45 screw-threadedly engages sprocket carrier 48 for effecting adjustment of said sprocket carrier toward and away from guide member B, thereby varying the tension on the cutting chain D. When it is desired to change the adjustment of the tension of the cutting chain, pin 49 is pulled outwardly against the tension of compression spring 50 thereby withdrawing the flat end portion 51 of pin 49 out of a slot 52 in the shaft portion 43 of handle 42. When pin 49 is retracted, handle 42 can be rotated to effect adjustment of chain tension and then pin 49 is released and end portion 51 drops into a slot 52 to prevent further rotation of handle 42 thereby maintaining the adjusted chain tension. When retracting pin 49, if it should be desired to maintain said pin in retracted position, this can be accomplished by rotating the pin 49 until stop pin 53 rests on the upper end of boss 54. Then pin 49 is released by rotating until stop pin 53 drops into slot 56.

Having thus described our invention, what we claim is:

A chain saw machine comprising a power unit, a guide member extending outwardly from the power unit, a cutting chain having driving engagement with the power unit and being trained about the guide member, the guide member being provided with a plurality of perforations spaced in linear relationship from the power unit, a bumper member spaced from the power unit and being adapted to be selectively located over the perforations, and means cooperating with the selected perforations for securing the bumper member in place on the guide member.

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