United States Patent [19]

Jureiwicz

[11] **3,842,871**

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[54] **TREE STUMP SPLITTING ASSEMBLY**

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[52] **U.S. Cl.** ..... **144/2 N,** 144/193 A, 214/145

[51] **Int. Cl.** **B27c 9/00,** A47j 49/02

[58] **Field of Search** . 144/2 R, 2 N, 309 AC, 309 R, 144/193 R, 193 A, 193 B, 193 D; 214/14 S

[56] **References Cited**

UNITED STATES PATENTS

2,966,180	12/1960	Bles	144/2 N
3,461,927	8/1969	Funari	144/2 N
3,620,271	11/1971	Loyer	144/2 N

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[57] **ABSTRACT**

A stump splitting blade with laterally spaced apart ears, each ear respectively formed with a respective hole, with said holes being in alignment; said ears being predeterminedly spaced to receive the terminal end portion of a tool carrier mounted on a powered vehicle, such as a tractor, or the like. Said tool carrier being formed with a hole which may be registered with said aligned holes to receive a connecting pin to operably mount the stump splitting assembly on the carrier.

Said blade being formed with a downwardly extending notch, with opposed, upwardly divergent edge surfaces defining said notch, and receiving between said surfaces the terminal end portion of said tool carrier; stop plates extending between said ears, and being spaced forwardly and rearwardly of said connecting pin, said stop plates occupying upwardly divergent planes to present opposed and upwardly divergent surfaces to said terminal end portion of said tool carrier.

The angle of said divergency being such as to cause the engagement of the tool carrier with one or the other of said stop plates to limit otherwise permissible angular travel of the blade about the axis of said connecting pin. The terminal end portion of said tool carrier is formed with an arcuate surface concentric with the hole formed therein, whereby insertion of said terminal end portion between said inclined stop plates, will cause engagement of said arcuate surface with said opposed inclined surfaces of said stop plate, and result in registration of the hole formed in said tool carrier with said aligned holes in said ears to facilitate insertion of said connecting pin.

8 Claims, 5 Drawing Figures

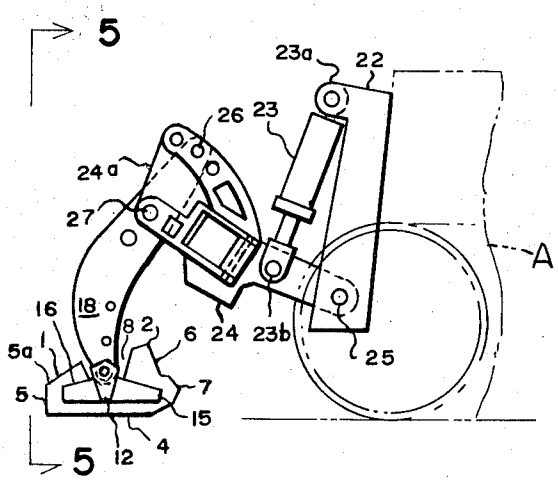


FIG. 1

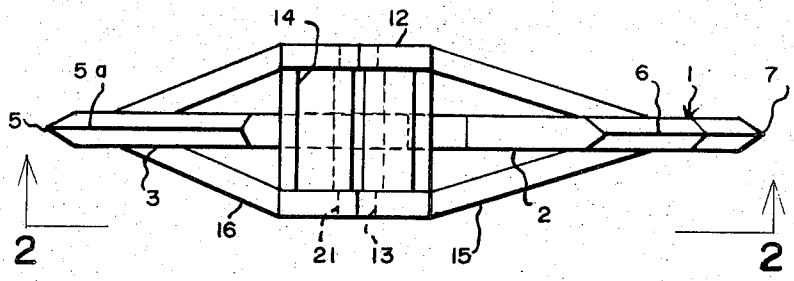


FIG. 3

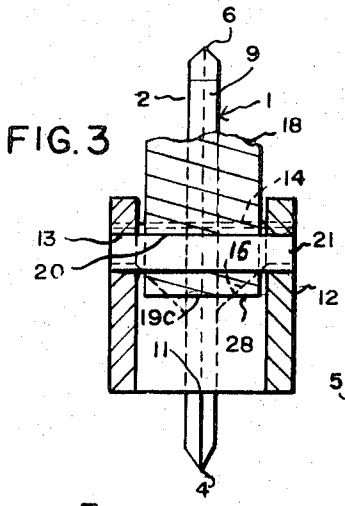
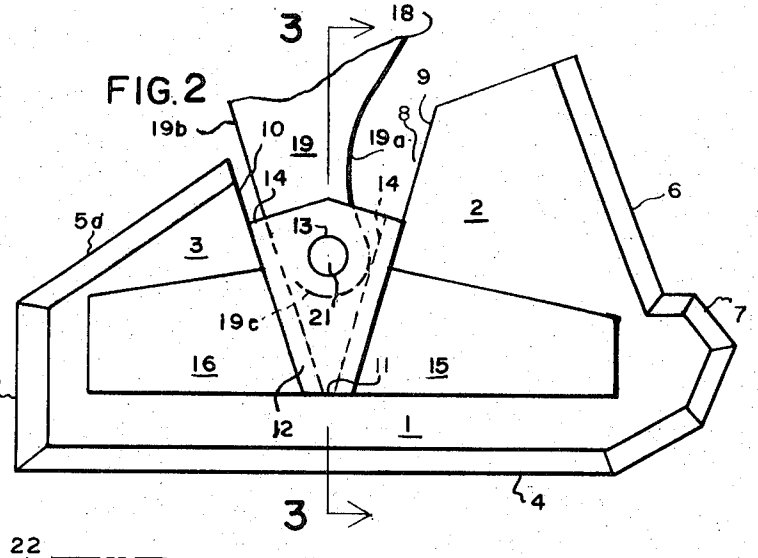


FIG. 2



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FIG. 4

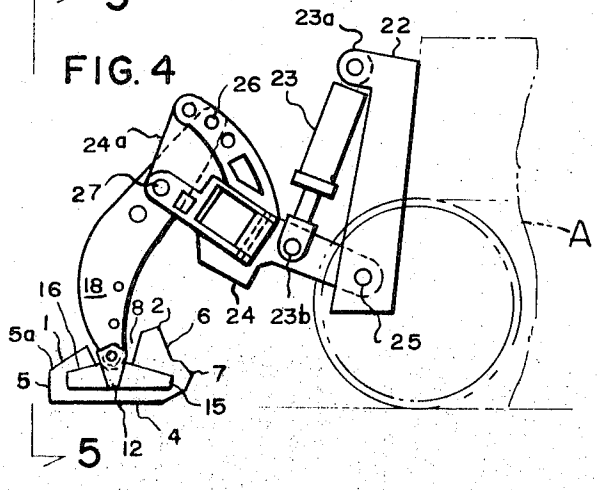
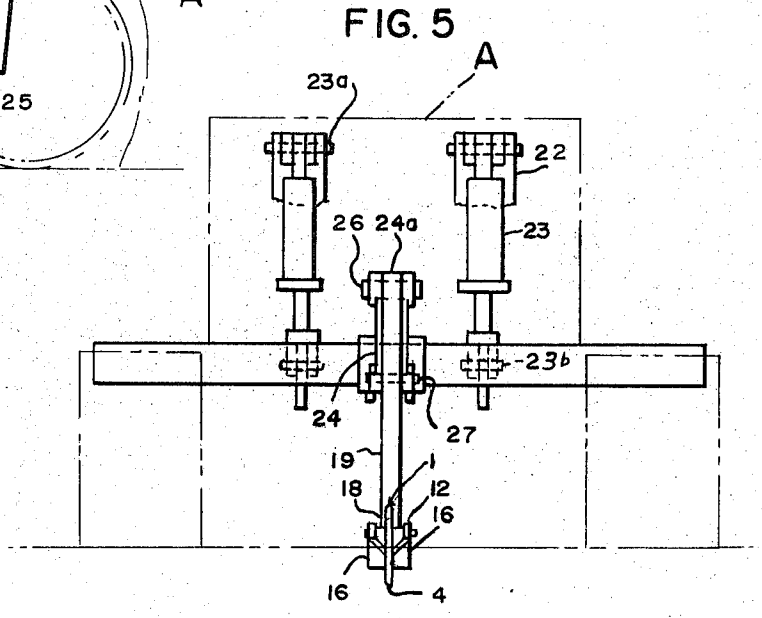


FIG. 5



TREE STUMP SPLITTING ASSEMBLY

FIELD OF INVENTION

The field of invention lies in the area of improved stump splitting devices and mounting means for mounting said devices on a pre-existing powered vehicles for use.

BACKGROUND OF INVENTION

Cutting blades have long been used with powered vehicles to split stumps, logs, and the like, and one of the most recent such devices is disclosed in U.S. Pat. No. 3,620,271, issued to Laverne L. Loyer. In said patent, there is disclosed a plate **22** designated to be mounted upon a specific Caterpillar tractor. The tractor is provided with a pivotally, mounted, hydraulically powered tool operating assembly. Constructed for use with said tool operating assembly is a tool carrier which has a double connection to the tool operating assembly to be carried by said operating assembly but which arm is not disclosed in said patent. Rather, a tree stump removing blade is disclosed with an identical two-point provision for mounting in place of said carrier upon said assembly.

SUMMARY AND OBJECT OF THE INVENTION

Invention resides in, and the object of this invention is, to provide a tree stump splitting assembly which utilizes the aforesaid carrier on the aforesaid tractor, and provides a blade equipped to be mounted upon the said carrier with only a single connection thereto.

A further object of the invention is to adapt said blade to be mounted upon the terminal end portion of said carrier by a single connecting pin, to have limited angular travel about the longitudinal äxis of said connecting pin.

A further object of the invention is to adapt said blade to limit said arcuate travel in either direction, so that forces applied to said blade will be directed to drive said blade to effect the purpose of said blade.

Still another object of the invention is to provide a mounting means on said blade to mount said blade upon said terminal end portion of the tool carrier, and to utilize the contour of said terminal end portion in engagement with said mounting means to register the mounting hole in said terminal end portion with one or more holes in said mounting means.

These and various other objects are attained by the construction hereinafter described and illustrated in the accompanying drawings, wherein:

FIG. **1** is a plan view of the stump splitting assembly, with the carrier omitted for clarity.

FIG. **2** is a side elevational view of the device taken on line **2—2** of FIG. **1**, and showing the terminal portion of said carrier.

FIG. **3** is a vertical, sectional, elevational view taken on line **3—3** of FIG. **2**, also showing a portion of said carrier.

FIG. **4** is a side elevational view on a substantially smaller scale showing a tractor body drawn in phantom line, with a mounting bracket, tool operating lever, hydraulic cylinder, and the carrier shown thereon, with the stump splitting assembly secured to the terminal end portion of said arm.

FIG. **5** is a rear elevational view taken on line **5—5** of FIG. **4.**

In these views the reference character **1** indicates a centrally disposed blade having a forward portion **2** and a rearward portion **3.** Much of the periphery of said blade is sharpened to form a bottom cutting edge **4** and a rear cutting edge **5, 5***a*. The forward section **2** of the blade **1** is formed with a sharpened cutting edge **6** which downwardly terminates in a protruding toe-like cutting edge **7.**

Centrally, the blade is formed with a downwardly extending V-shaped notch **8,** defined by a front face **9** and a rear face **10.** Said faces are upwardly divergent, and at their lower ends are contiguously conjoined by a bottom surface **11.**

As may readily be seen in FIGS. **1** and **2,** a pair of ears **12** flank the blade **1,** and may be so formed as to approximately be in alignment with the edges of the notch **8.** Each ear is formed with a respective hole **13,** with said holes being in alignment, one with the other.

Extending between the ears **12,** are respective forward and rearward stop plates **14,** which stop plates also are disposed in upwardly divergent planes as may be seen in FIG. **2.** The stop plates **14** and ears **12** may be secured as by welding or any other convenient means to the blade **1.** If desired, reinforcing members **15** and **16** may be employed to interconnect the ears **12** to the respective front and rear portions of the blade **1.**

Reference character **19** designates the terminal end portion of the carrier **18** which is mounted as hereinafter described upon a powered vehicle. Said end portion terminates in an arcuate contour **19***c* concentric with a hole **20** formed in said end section. As will be clear from the foregoing description and from the drawings, the hole **20** must be in alignment with the holes **13** so that three holes may receive a connecting pin **21.**

Some limited angular travel about the longitudinal axis of said connecting pin may be afforded. It should be observed that the terminal end portion of the tool carrier has front and rear edge surfaces **19***a* and **19***b*, which, absent the stop plates **14,** would engage the respective faces **9** and **10** of the notch **8** to limit the aforesaid angular travel about the longitudinal axis of the connecting pin **21.** When, however, the stop plates **14** are used, the opposing surfaces of such plates engage said edge faces **19***a* and **19***b*.

The stump splitting assembly is designed for use on an existing convential, powered vehicle, which may take the form of a caterpillar tractor A, shown in phantom line. Shown in solid lines, and mounted on the rear of the tractor are brackets **22,** which respectively mount respective hydraulic cylinders **23.** The upper end of each hydraulic cylinder is pivotally mounted as at **23***a* on a bracket, and the lower end of each piston rod is pivotally secured as at **23***b* to a lever assembly **24.**

The lever assembly is pivotally mounted as at **25** to the lower end portions of the aforesaid brackets **22.** It is to be noted that the upper portion **24a** of the lever assembly is provided with a plurality of holes to effect an interconnection with a pin, as at **26.** Spaced downwardly from said holes **26** is a second hole to afford a second hole and pin connection as at **27.**

As stated earlier herein, this invention affords the use of the tool carrier **18,** which is conventionally available for use with the caterpillar tractor A. The carrier **18,** as is clearly seen from the drawing, tapers to a relatively

small protuberance **19**, which is terminally formed with an arcuate surface **19***c* concentric with the hole **20**. The angle of upward divergency of the respective stop plates **14** may be predetermined so that insertion therebetween of the terminal end portion **19** will cause said arcuate surface **19***c* to engage the opposing inclined faces of said stop plates, with the effect that as long as said arcuate surface is in such engagement, the hole **20** will automatically be in registration with the aligned holes **13** for insertion of the connecting pin **21**.

It is understood, of course, that the tractor A is provided with a power source (not shown) effective upon the hydraulic cylinder **23** to operate the lever assembly **24** in the use of the stump splitting assembly, and indeed, of any other tool attached to said tool carrying member.

What I claim is:

1. The combination with a vehicle having a power source, and a tool carrier carried by said vehicle for at least up and down travel thereon, and a power transmission from said power source to said carrier to effect such travel, of a tree stump splitting assembly, including,

a blade, adapted to be mounted on said carrier to be operably carried in said up and down travel,

at least one ear secured to said blade,

a hole formed in said ear,

a hole formed in said carrier, registrable with said hole in said ear, and

a connecting pin or the like received in said holes.

2. The combination as set forth in claim **1**,

said tree stump splitting assembly having limited angular travel about the longitudinal axis of said connecting pin, and

means on said assembly to limit said angular travel.

3. The combination as set forth in claim **2**,

a downwardly extending notch formed in said blade,

said notch having opposed spaced edge surfaces defining said notch,

said ear being secured to said blade laterally of said notch, and

said tool carrier having predeterminedly contoured surfaces, and said notch being proportioned to receive said surfaces, and

said edges of said notch engaging said surfaces to limit the angular travel of said blade about said axis.

4. The combination as set forth in claim **3**,

stop plates rigidly secured to said ear, in spaced relationship to each other,

said contour of said carrier being received between said stop plates, and engageable with said stop plates to limit said angular travel in either direction.

5. The combination as set forth in claim **1**,

a second ear spaced apart from said first mentioned ear, said ears flanking and being secured to said blade,

a respective hole formed in each respective ear, said respective ears being in alignment,

said tool carrier having a terminal end portion,

said ears being spaced to receive said terminal end portion therebetween,

a hole in said terminal portion, said hole being registrable with said aligned holes, and

a connecting pin or the like received in said aligned and registered holes to mount said assembly on said carrier.

6. The combination as set forth in claim **5**,

means to engage said terminal portion of said carrier to limit said angular travel.

7. The combination as set forth in claim **5**,

a pair of spaced stop plates extending between said pair of ears, said plates being disposed respectively forwardly and rearwardly of said connecting pin to engage said carrier to limit said angular travel in either direction about the axis of said pin.

8. The combination as set forth in claim **7**,

an arcuate surface formed on said terminal end portion of said tool carrier, said surface being concentric with said hole formed in said carrier.

said stop plates being upwardly divergent at a predetermined angle such that contact of said arcuate surface with both opposing faces of said stop plates substantially registers said hole in said carrier with said respective aligned holes to facilitate insertion through said holes of said connecting pin.

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