Aug. 19, 1969 J. P. THOMAS 3,462,185

HYDRAULIC LOG GRAB ATTACHMENT

Filed Oct. 31, 1967 2 Sheets-Sheet 1

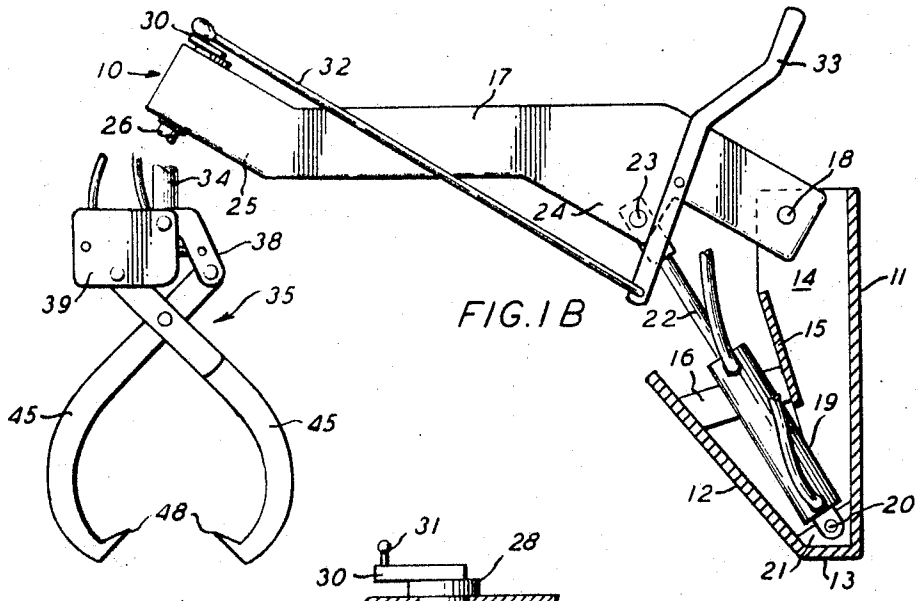

FIG. 1 B

FIG. 1. A

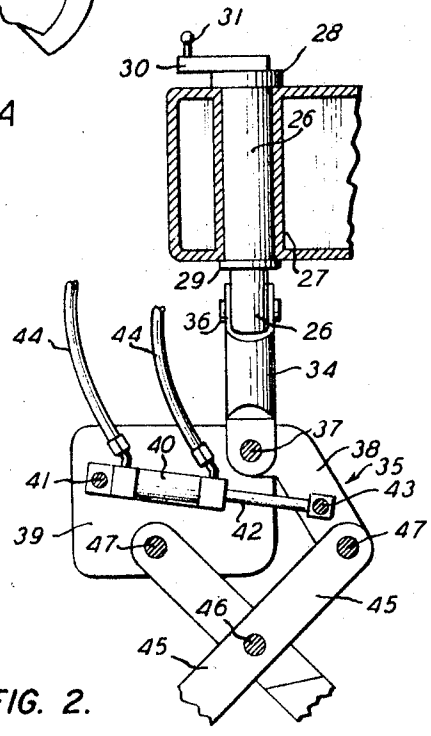

FIG. 2.

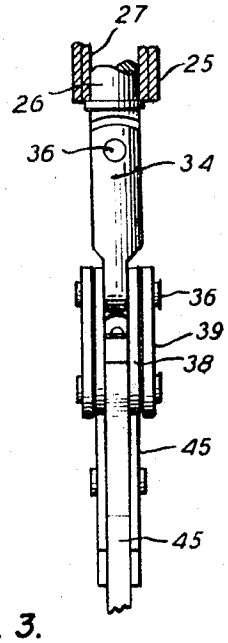

FIG. 3.

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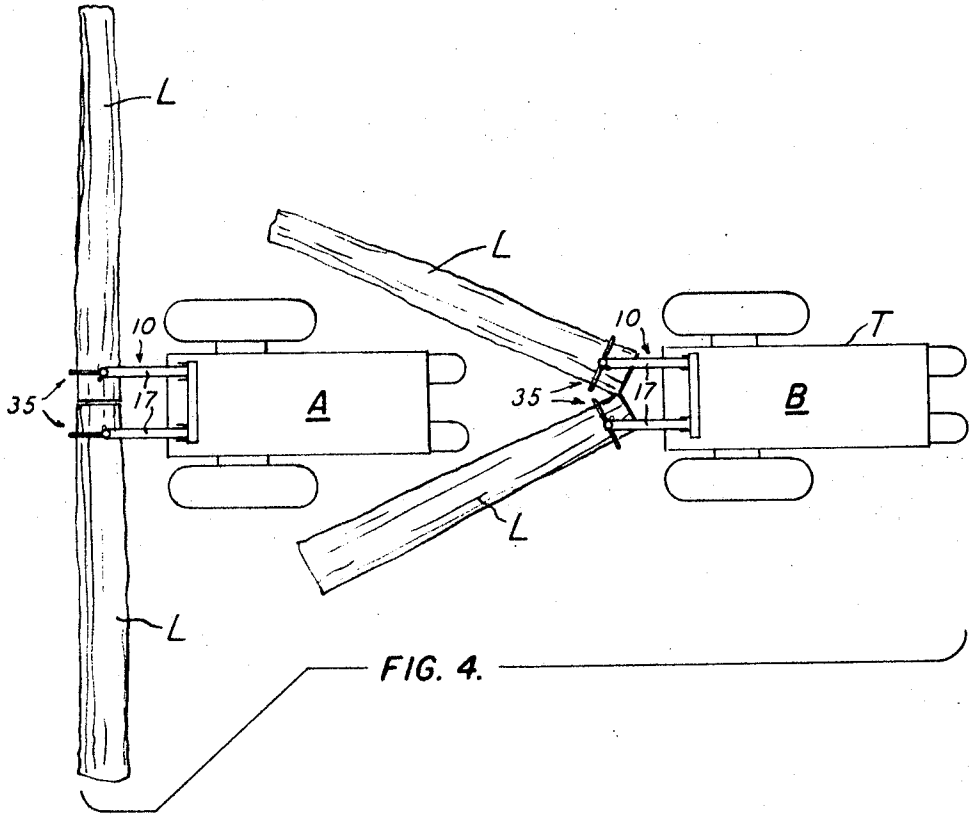

FIG. 4.

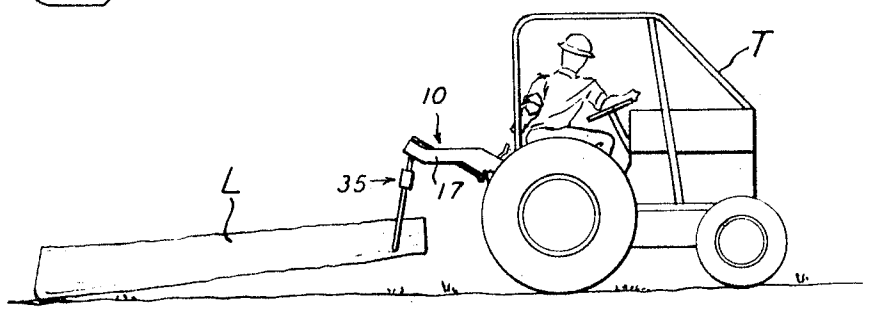

FIG. 5.

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HYDRAULIC LOG GRAB ATTACHMENT

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Int. Cl. B66c 1/10, 3/00; B25b
U.S. Cl. 294—118 1 Claim

ABSTRACT OF THE DISCLOSURE

A hydraulic log grab for mounting on a prime mover such as a tractor and wherein the weight of the log increases the set pressure of the tongs. The tongs are rotatably mounted on the end of at least one rearwardly extending arm or boom which is pivotally connected with the prime mover and operated in a vertical plane. In addition to a tong linkage whereby the weight of the log increases the set pressure, there is a hydraulic cylinder across the tong linkage for initially setting the tong points and for releasing the log.

This invention relates to log grabs mounted on prime movers and has reference to an improved log engaging tong construction.

Heretofore it has been the practice to use hydraulically operated clams which encircled one or more logs at a time, but obviously such clams did not firmly engage the logs to be lifted and hauled. Also, tongs capable of dragging logs were used, but did not include the present hydraulic cylinder across the tong linkage for initially setting the tong points and subsequently releasing the logs. Instead, constant hydraulic pressure was applied throughout the log moving operation.

The primary object of the present invention is to provide a log grab mounted on a prime mover and wherein increased pressure is applied to the points of the tongs by reason of the weight of the log suspended thereby.

Another object is to provide a tong linkage including a hydraulic cylinder across opposite pivot points of the tong linkage for initially setting the tong points and subsequently releasing the log being hauled, even when the prime mover is moving.

Another object is to provide a log grab as referred to which may be in the form of an attachment for prime movers.

Generally, the invention contemplates an economical and efficient log grab which is time saving in its operation.

These and other objects of the invention will become apparent from the following description and the accompanying drawings, in which:

FIGURE 1A is an elevational view of a tong assembly according to the invention.

FIGURE 1B is a side elevational view of the tong assembly supporting arm. FIGURES 1A and 1B are at right angles with respect to each other.

FIGURE 2 is an enlarged broken elevational and sectional view of the tong linkage of the preferred form of the invention mounted on the extending end of the supporting boom or arm.

FIGURE 3 is a view similar to FIGURE 2 but is taken at a right angle with reference thereto.

FIGURE 4 is a top plan view showing two positions of a tractor having two arms, a pair of tongs on each, first engaging and then initially towing bucked logs, and

FIGURE 5 is a side elevational view showing the logs being towed.

In the drawings the numeral **10** generally designates a log grab for attachment to the back of a tractor T. The grab **10** shown includes a vertical mounting plate **11** and an upwardly and rearwardly disposed protector plate **12**,

the lower edges of which are connected by a narrow horizontal bottom plate **13**. There are rearwardly extending sides **14** on the ends of the mounting plate **11** and there is a cross member **15** between the rear edges of the sides. The protector plate **12** is braced by brackets **16** connected between its ends and the sides **14**. An arm **17**, also herein referred to as a boom, is pivotally mounted at one end between the upper portions of the sides **14** by means of a transverse pin **18**. The arm **17** is raised and lowered by a hydraulic cylinder **19**, the closed end of which is pivotally mounted by a pin **20** on a gusset **21** which is mounted, as by welding, on the inner surfaces of the mounting plate **11**, the protector plate **12** and the bottom plate **13**. The piston rod **22** of the cylinder **19** is connected at **23** with a depending shoulder **24** on the arm **17** relatively near the pivoted end thereof and which arrangement locates the upper end of the cylinder betwen the cross member **15** and the upper portion of the protector plate **12**.

The outer end **25** of the arm **17** extends upwardly at an angle where it rotatbaly receives a crank shaft **26** for rotation in a vertical plane. As shown in FIGURE 2, the crank shaft **26** is received in a bearing **27** and the upper end of the shaft has a shoulder **28** which turns on the upper surface of the arm extension **25**. Similarly, there is a removable collar **29** around the crank shaft **26** just below the arm extension **25** to prevent vertical displacement of the shaft. On the upper end of the shaft **26** there is a crank **30** having an upwardly extending wrist pin **31** to which a tie rod **32** is connected. In the form of the invention shown the tie rod **32** is connected with a lever mounted on the arm **17** near its inner end. To those versed in the art it will be obvious that other remote control means may be employed for selectively rotating the shaft **26**, for example, a flexible cable assembly, not shown.

On the lower end of the shaft **26** there is a pivotally connected supporting rod **34** which pivotally supports a tong assembly **35**. The upper end of the rod **34** is connected to the shaft **26** by a pivot pin **36** and the lower end of the rod supports the long assembly by another pin **37**. It is to be noted that the two pins **36** and **37** are at a right angle to each other so as to provide a universal action.

The lower end of the supporting rod **34** is flat on opposite sides to accommodate a pair of links **38** on the one side and a pair of linkage plates **39** on the other. In the appended claim the plates **39** are also referred to as links, the same as the first described links **38**. As best shown in FIGURE 2, there is a double acting hydraulic cylinder **40** between the plates **39**, the closed end of which cylinder is pivotally mounted, at **41**, near the outer edges of the plates, whereas the extending end of the piston rod **42** is pivotally mounted between the links **38**, at **43**, near the lower ends thereof. Flexible hydraulic lines **44** are connected with the ends of the cylinder **40** in the usual manner.

Scissors type tong arms **45** are pivotally connected with each other, at **46**, near their upper ends and which upper ends are connected, at **47**, to the lower ends of the links **38** and the link plates **39**. The points **48** of the tong arms **45** are pointed upwardly and inwardlly when the tong arms are closed, and when the arms are completely open the points are never pointed lower than horizontal..

Referring now to FIGURES 4 and 5, there are two log grabs **10** mounted on the back of the tractor T, and as shown in position A of FIGURE 4 the tong assemblies **35** are positioned over the bucked ends of logs L of a felled tree. The cylinders **40** are then actuated in a direction to cause the points **48** of the respective pairs of tong arms **45** to engage opposite sides of the logs L, after which the arms **17** are raised by the first described cylinders **19**. Initially, when the tractor T moves forward, the logs L take angular positions as shown in position B in FIGURE 4, and after

which they drag behind the tractor T as shown in FIGURE 5. Because of the described extending angle **25** of each arm **17**. the angle of the shaft **26** therethrough and the pivotal connection of the supporting rod **34**, the supported ends of the logs L are lifted when the tractor turns. Operation of the cylinder **40** in a direction to expand the tong arm points **48** will release the logs, even while the tractor is moving. By reason of the described scissors type tong assembly and arrangement of points **48** on the tong arms **45**, the weight of a lifted log increases the grip of the tongs.

The invention is not limited to the constructon herein shown and described, but may be made in various ways within the scope of the appended claim.

What is claimed is:

1. A log grab for mounting on a prime mover, said log grab being comprised of an arm pivotally mounted at one end to said prime mover for vertical movement, a depending scissors type tong assembly beneath the extending end of said arm, means rotatably and hingedly supporting said tong assembly, means raising and lowering said arm, means selectively rotating said tong assembly, means selectively opening and closing said tong assembly,

and wherein the extending end of said arm is turned upwardly at an angle with reference to its intermediate length, a rotatable shaft through said extending end perpendicular to the upper and lower edges thereof, a supporting rod above said tong links pivotally connecting the upper ends of said tong arms with said rod, a hydraulic cylinder connected across said links, and wherein said means rotatably and hingedly supporting said tong assembly include a pivot connecting the upper end of said supporting rod with the lower end of said shaft.

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U.S. Cl. X.R.

214—147