Dec. 2, 1958 R. W. LARSON 2,862,756

PULPWOOD GRAPPLE

Filed May 31, 1955 2 Sheets-Sheet 1

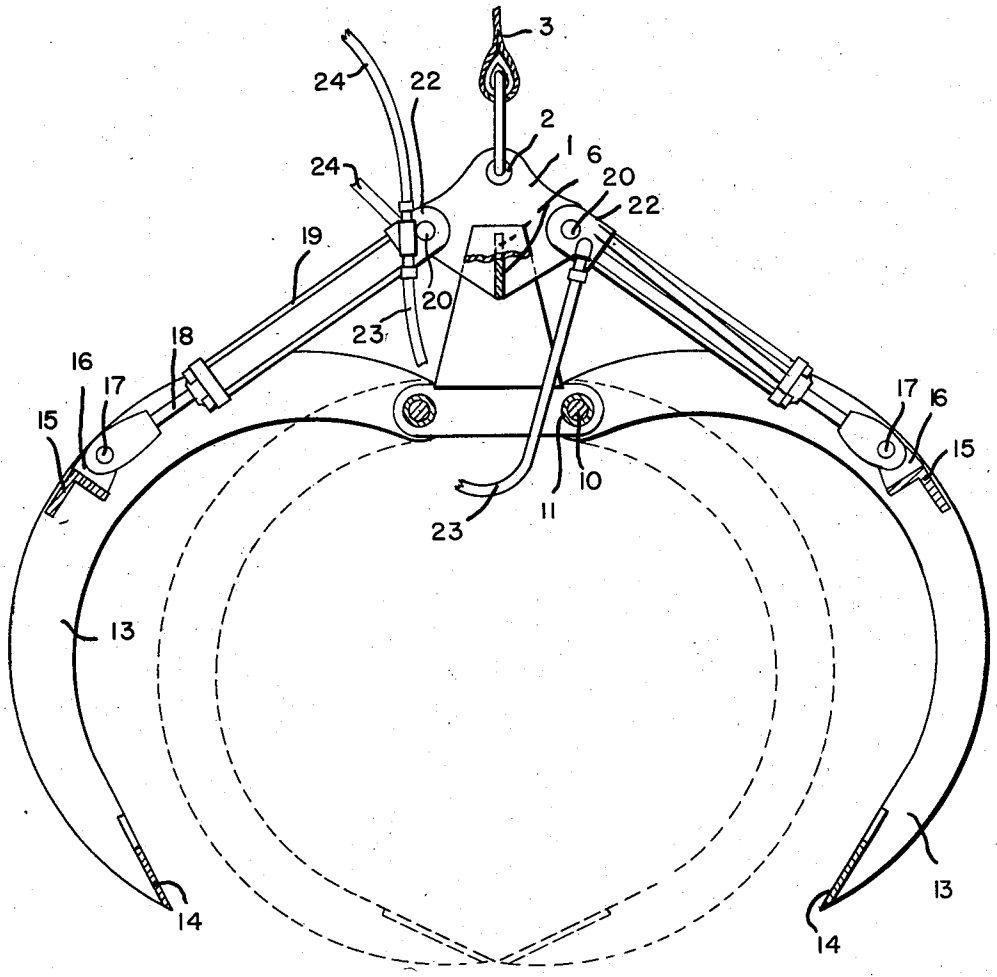

FIG. 1

INVENTOR.
ROBERT LARSON
BY
Richard P. Cardew
AGENT

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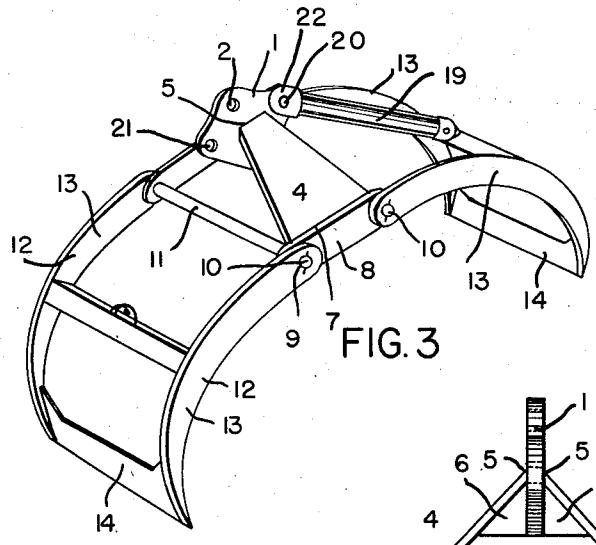

FIG. 3

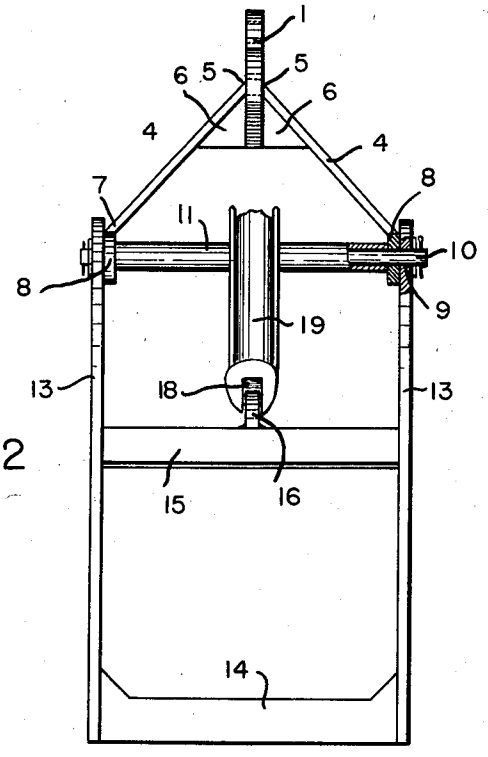

FIG. 2

INVENTOR.

ROBERT LARSON

BY

Richard P. Cardew

AGENT

United States Patent Office

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PULPWOOD GRAPPLE

Robert W. Larson, Ely, Minn.

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2 Claims. (Cl. 294—88)

This invention relates to improvements in grapples which are used for loading stick wood such as pulpwood, logs and the like.

There have been many clam buckets made and patented for handling a large variety of materials. However, none of these buckets have been entirely satisfactory when used for short lengths of material such as pulpwood. A clam bucket is conventionally made extremely heavy, purposely, so that its weight will cause the bucket to sink deep enough into the material to permit it to grab a load of sufficient quantity. Because of their weight, these buckets are clumsy and require more operative skill to handle because of the excessive effort required to start a swing and to stop the swing once started, in positioning such buckets when empty. Also, it is sometimes quite difficult to sink these buckets in to a wood pile deep enough to obtain economical loading of the bucket, and impossible if the bucket has side members which will not accommodate a full length stick.

In addition these heavy buckets are expensive to buy because of the amount of extra heavy material required to make them and because the heavier materials are more difficult to work with as far as cutting, welding, drilling and machining are concerned. Also, they usually employ a relatively large number of parts in their construction.

Another disadvantage of presently known clam buckets is that they are usually closed to grab their load by a cable operating on sheaves which tends to lift the bucket as it closes, and thereby hindering its gripping of a full load of wood. Further, conventional grapples tend to cause and permit sticks or logs to roll and tumble askew which greatly complicates the orderly loading thereof.

It is therefore one of the principal objects of my invention to provide a bucket or grapple for handling pulpwood and the like, which will overcome the disadvantages of the present clam buckets.

A more specific object of my invention is to provide a light weight grapple which is hydraulically closed so that it will grip a load of wood positively and in orderly fashion.

Another such object is to provide a pulpwood grapple which is simple and inexpensive to manufacture using few and easy to make parts, yet has an efficient construction and cooperative arrangement of its parts to provide positive squeezing action in obtaining a full load of parallel stacked wood lengths each time it is operated.

Another object is to provide such a bucket or grapple which is easy to handle in operation.

These and other objects and advantages of my invention will become more apparent as the description proceeds.

In the accompanying drawings forming a part of this application:

Fig. 1 is a vertical sectional view of one of my improved grapples.

Fig. 2 is an end view of Fig. 1, with parts broken away and in section.

Fig. 3 is a perspective view of the device shown in

Fig. 1 with one hydraulic cylinder removed to show the construction of the central section more clearly.

In the drawing, the reference numeral 1 indicates the anchor or support of the pulpwood grapple which is preferably made of a single piece of metallic plate and has a hoist connector such as an eye or opening 2 therein to receive one end of the cable 3 by means of which it is raised and lowered and moved when in operation. The eye 2 is, of course, at substantially the point of balance of the pulpwood grapple.

To the anchor member 1, I have welded a pair of downwardly inclined support members 4—4, one on each side of the plate or anchor member 1, each of the support members being inclined at the same degree relative to the anchor and extending therefrom in alignment with the pull of the cable 3, as shown. The members 4—4 are welded as at 5 to the anchor member 1, and each has a triangularly shaped brace or bracket 6 having one edge welded or fixed to the inner face of the inclined support member 4, and the other edge of the brace being welded to the anchor member 1 as shown in Fig. 2. This arrangement provides a rigid mounting for the support members to the anchor plate.

Each of the supports 4—4 is preferably wider at its lower end 7 than at its upper end, and each of the lower ends is welded or otherwise fixed to a side plate member 8 which extends in angular relation to the support members 4—4, and preferably in substantially parallel alignment with the anchor member 1, as shown.

The side members 8—8 each have an opening 9 at each end thereof to receive a pair of pivot shafts 10—10, in substantially parallel relationship between the side members 8—8, as shown. A spacer 11, of pipe or the like is preferably mounted on the shafts 10—10 between the side members to maintain them in their desired spaced relationship to each other.

The pivot shafts 10—10 each have their ends projecting beyond the side members sufficiently to pivotally receive the movable jaw frame members 12—12 of the bucket. The jaw frame members each include a pair of spaced arcuate arms 13, one pivotally carried on each end of their respective pivot shafts 10, as shown. Means for rigidifying the jaw members also include a straight-edged transverse lip member 14 joining the lower ends of each pair of the arcuate arms in parallel confronting relation, and a second angle iron member 15 mounted between each pair of arms intermediate their ends.

To provide a mounting for one end of extensible power means such as an hydraulic cylinder, I have fixed centrally of each angle member 15 a lug 16 having an opening therethrough to receive a pin 17, by means of which the piston rod 18 of an hydraulic cylinder 19 is pivotally connected to each of the movable jaw frames 12. The opposite end of the cylinder 19 is pivotally connected to the anchor member 1 by means of a pin 20 extending through a hole 21 in each side of the anchor member, and through mounting lugs 22 provided on the cylinders, as shown. The power means thus lies wholly without the boundary plane defining the space between the jaw frames 12 and permits substantially complete filling of the space with pulpwood.

The cylinders 19 are connected together by suitable hoses 23—23 and to a pair of lead off hoses 24 by means of which they are connected to any suitable source of hydraulic pressure and control means, preferably on the vehicle carrying the grapple, for operation.

In operation, the grapple is set down on a pile of pulpwood or the like with the jaw frames 12 open. Hydraulic pressure is applied to the cylinders 19 to force the piston rods out of the cylinders, thereby causing the jaw frames to move toward each other. In so doing, the straight-edged lips 14 engage and squeeze the sticks of

wood and pull and roll the sticks without tumbling into a tightly clamped bundle. No lifting effort is applied to the grapple by the cable, of course, to close the jaw frames. The cylinders alone accomplish this, since they have sufficient power to force the arcuately shaped jaws into the pile, thus gathering the wood into a bundle to accumulate a full bucket easily and quickly. The straight-edged nature of the transverse lips militates against individual pivoting of any of the sticks of wood which, once started, would permit uncontrolled tumbling of the sticks.

The grapple is light and easy to handle because of its simple construction, and as may be readily seen, is inexpensive and efficient for the purpose intended.

Having thus described my invention, what I claim is:

1. A pulpwood grapple comprising a support having a hoist connector, a pair of confronting jaw frames each pivotally secured to the support at a lower position thereon, power means connected with each of said jaw frames for exerting simultaneous converging force thereon, said jaw frames each having a pair of spaced arms concave toward one another to define an open-ended cooperative structure permitting the ends of pulpwood to extend

therethrough and beyond each end, and each further having a transverse lip extending across the lower ends of said arms, the transverse lips each having a terminal straight-edge parallel to that of the other whereby to uniformly squeeze and gather a plurality of parallel and stacked pulpwood pieces which maintaining their parallel character.

2. The structure set forth in claim 1, wherein the power means is of hydraulic ram construction pivotally connected to said jaw frames and lying wholly without the boundary plane defining the space between the jaw frames.

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