United States Patent

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[72] Inventor **Thomas H. Radle**
Orr, Minn.

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[73] Assignee **Elmer Mrozek**
Waukesha, Wis.

[54] **PULPWOOD SLASHER**
4 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** ..... **143/46 R,** 144/3 D
[51] **Int. Cl.** **B27b 11/12**
[50] **Field of Search** ..... 143/46, 43, 6; 144/3 D

[56] **References Cited**
UNITED STATES PATENTS

1,746,594	2/1930	Jacobson	143/46 R
3,455,352	7/1969	Sanders et al.	143/46

Primary Examiner—Donald R. Schran
Attorney—Merchant & Gould

ABSTRACT: A longitudinal frame having a log-supporting surface for the reception of multiple stems of pulpwood positioned and secured thereon by a boom and grapple. A longitudinally movable butt plate at one end of the log-supporting surface engages the adjacent butt ends of the logs to index same into even lengths relative to a circular saw mounted at the other end of the log-supporting surface. The circular saw is mounted for movements in a plane, perpendicular to the log-supporting surface, at any given angle in the plane, through 180° of arc, relative to the log-supporting surface to saw the pulpwood into short common lengths and the boom and grapple is utilized to remove the cut lengths from the supporting surface.

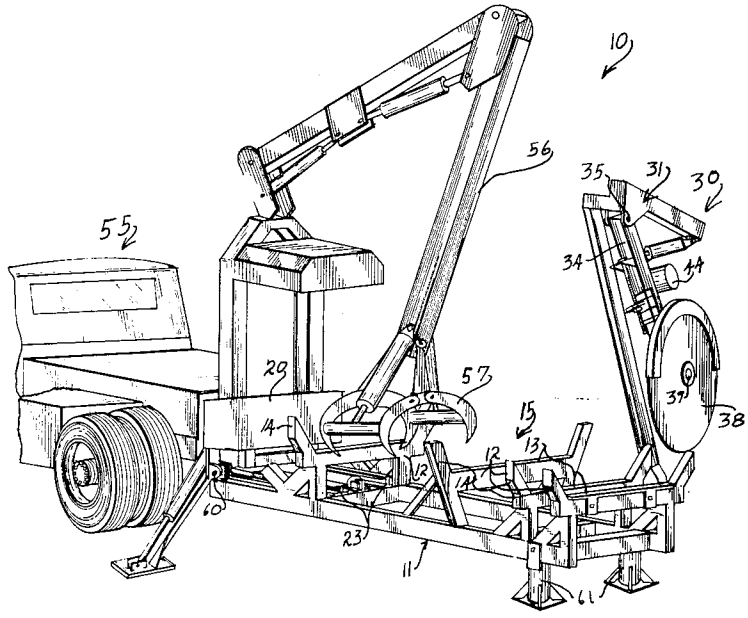


FIG_1

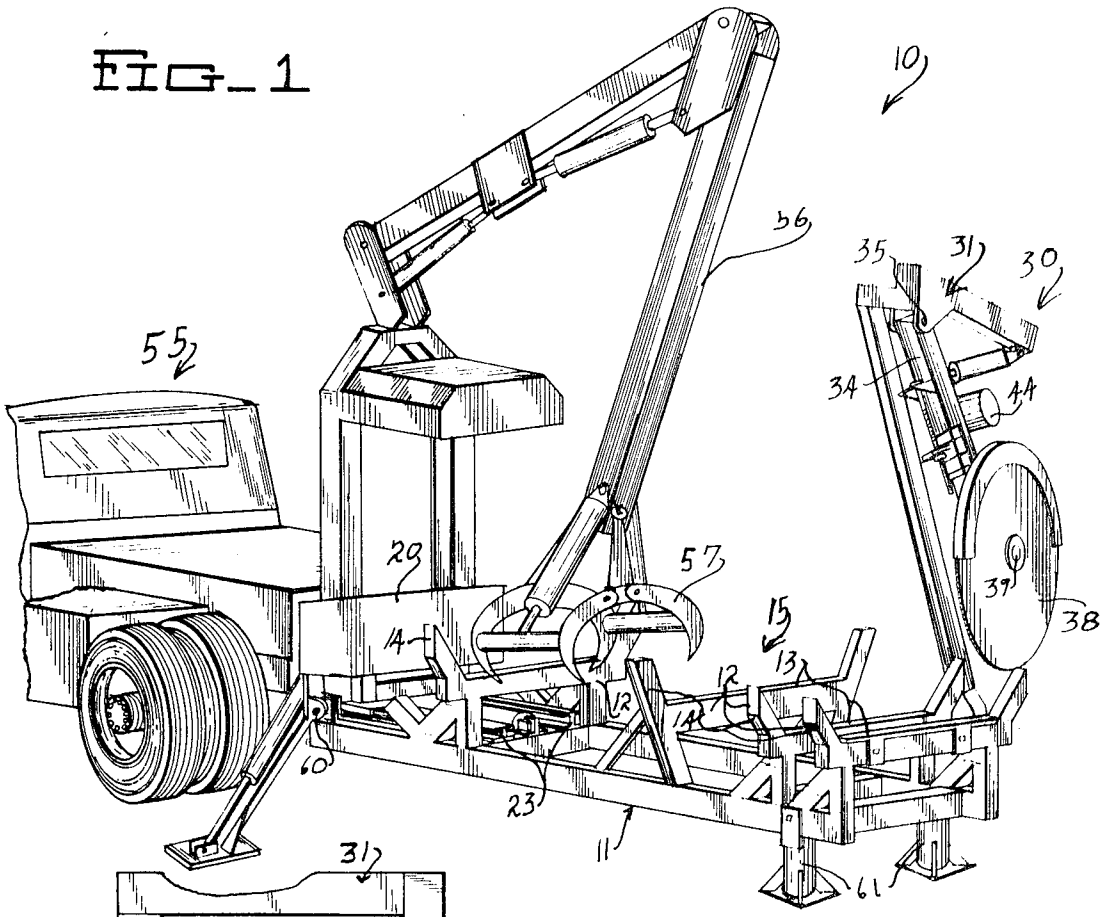
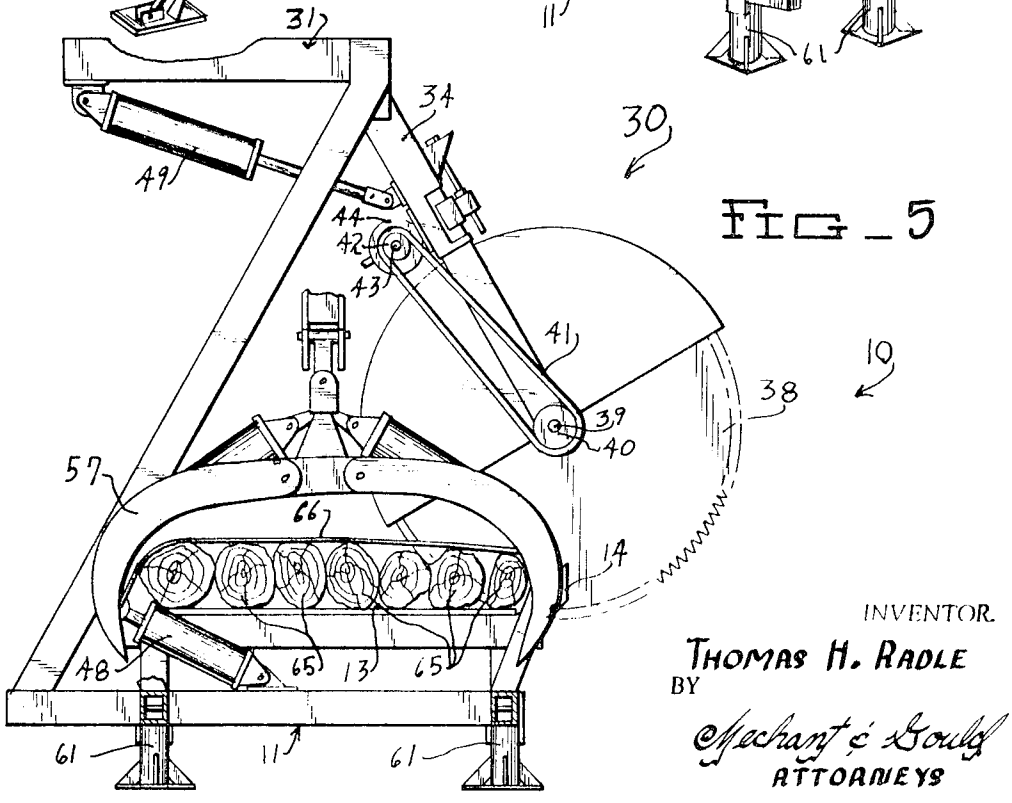


FIG_5



INVENTOR.
THOMAS H. RADLE
BY
Merchant & Gould
ATTORNEYS

FIG-3

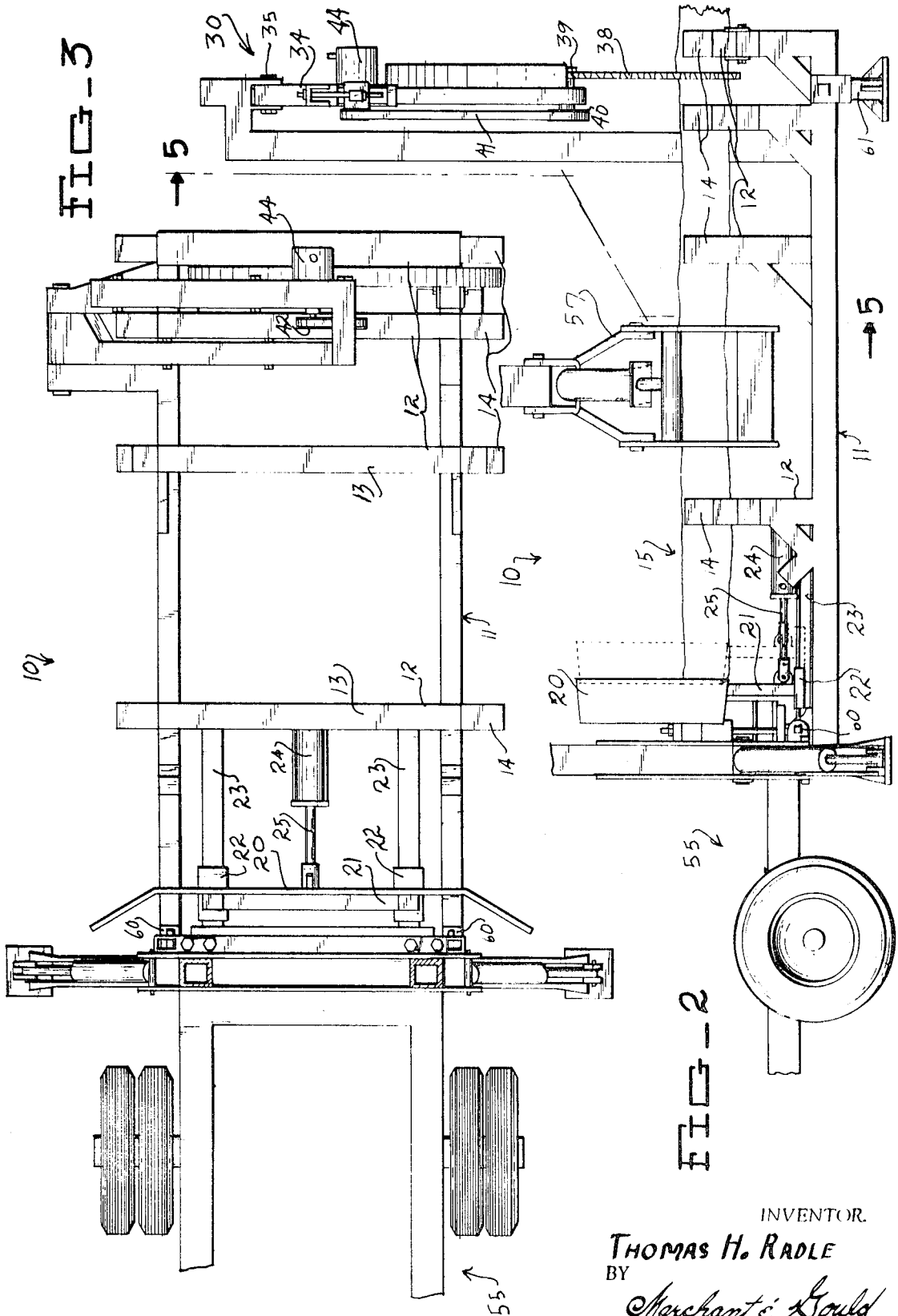
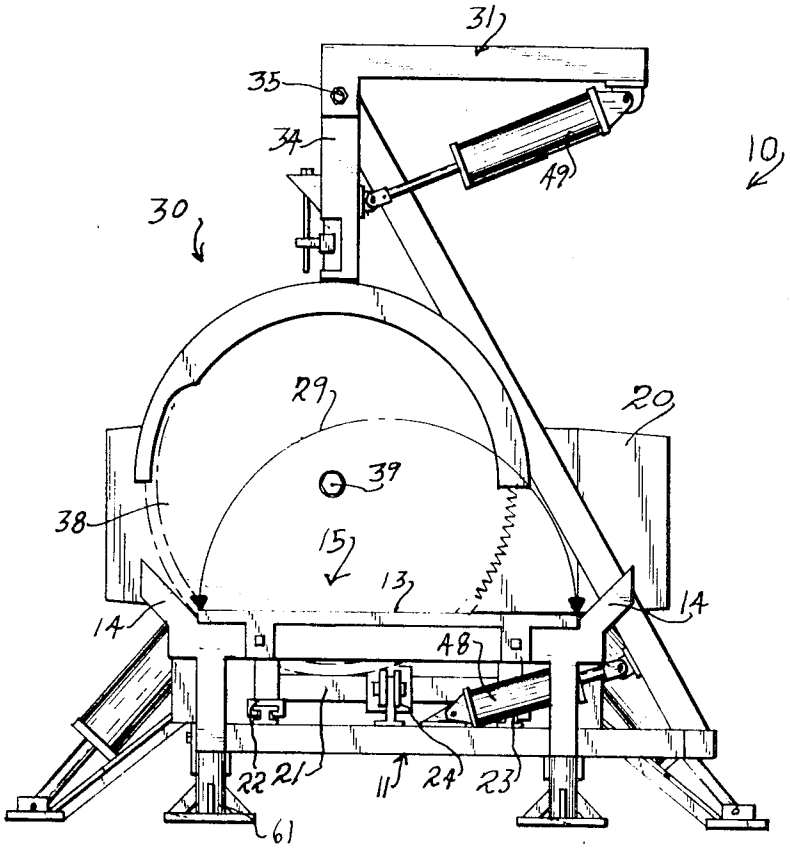


FIG-2

INVENTOR.
THOMAS H. RADLE
BY
Merchant & Gould
ATTORNEYS

FIG_4



INVENTOR.
THOMAS H. RAOLE
BY
Merchant & Gould
ATTORNEYS

PULPWOOD SLASHER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to material-handling devices and more particularly to a circular saw apparatus for providing short common lengths of pulpwood.

2. Description of the Prior Art

Various pulpwood sawing devices utilizing both chain-type saws and circular saws have heretofore been manufactured. Known prior art devices are constructed as an integral part of a front-end type materials-loading device or as a saw-carrying framework adapted to be mounted on the front end of the front-end materials-handling device. In either case each time one or a plurality of pulpwood logs are sawed into short lengths the device must be maneuvered within a given area to position the remaining portions of the pulpwood logs to be sawed or other pulpwood logs for subsequent evening, clamping, and sawing operations. Due to the size of such machines considerable area is required to effect such maneuvering. In addition, valuable time and labor is expended during such maneuvers resulting in increased operational costs. Also, such maneuvering area requirements on occasion results in the need to transport felled trees from greater distances since open maneuvering areas are generally at a premium in the locations where such tree-harvesting operations take place.

SUMMARY OF THE INVENTION

With the above problems in mind a pulpwood slasher is provided which has a rigid longitudinally extended frame pivotally secured to a prime mover having a boom and grapple for positioning and securing pulpwood logs on a supporting surface or cradle defined by the rigid frame. A butt plate is positioned adjacent one end of the frame so as to move into abutting relationship with adjacent butt ends of the pulpwood logs on the supporting surface to align such ends. A power-operated saw is mounted adjacent the other end of the frame by means of primary and secondary lever arms for movements in a plane perpendicular to the log-supporting surface and power means imparts independent movements to the primary and secondary lever arms to cause movement of the power-operated saw carried thereby toward the log-supporting surface at any given angle in the plane through 180° of arc relative to the log-supporting surface.

It is a primary object of the present invention to provide a pulpwood slasher which is relatively inexpensive to manufacture, small and light in weight, and durable in operation.

It is another object of the present invention to provide a device of the class above described which is extremely mobile, adapted to saw logs of varying diameters and lengths without pinching or binding, and is easily adaptable to serve dual functions.

These and other advantages will become apparent upon consideration of the accompanying specification, claims and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring to the drawings wherein like characters indicate like parts throughout the several views:

FIG. 1 is a view in perspective of a pulpwood slasher constructed in accordance with the present invention, portions thereof being broken away;

FIG. 2 is a fragmentary view in side elevation of the structure of FIG. 1, portions thereof being broken away;

FIG. 3 is a plan view of the structure of FIG. 2, portions thereof not shown;

FIG. 4 is a view in end elevation as seen from right to left of FIG 2; and

FIG. 5 is a view in vertical section as seen generally from the line 5—5 of FIG. 2, portions thereof broken away.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring more particularly to the drawings FIG. 1 thereof illustrates a pulpwood slasher indicated generally by the numeral 10. Slasher 10 includes a relatively rigid longitudinally extended frame 11 having upstanding bolsters 12, the upper surface of which defines a log-supporting surface 13. Pairs of spaced ears 14 on the bolsters 12 cooperate with the supporting surface 13 to define a longitudinally extended cradle indicated generally by the numeral 15. A butt plate 20 is mounted adjacent one end of the frame 12 so as to lie in a plane perpendicular to the supporting surface 13. Butt plate 20 is mounted for movements longitudinally of the frame 11 toward and away from the cradle 15 by means of a bracket 21 slidably mounted as at 22 on longitudinally extended laterally spaced rails 23 carried by the frame 11. A power-operated cylinder 24 is secured at one end to the frame 11 and includes a piston-equipped rod 25 secured at its free end to the frame 21 of butt plate 22 to impart movements thereto, as seen by dotted lines in FIG. 2, toward and away from the cradle 15 upon operation of the power-operated cylinder 24 for reasons which will be more fully explained hereinafter.

Power-operated saw means indicated generally by the numeral 30 is positioned adjacent the other end of the frame 11 and includes mounting means 31 adapted to mount the saw means 30 for movements in a plane perpendicular to the log-supporting surface 13 and at any given angle in such plane through at least 180° of arc, indicated by the line 29 in FIG. 4, relative to the log-supporting surface 13 as will be more fully described hereinafter in the description of operation. Mounting means 31 includes a primary lever arm 32 having one end thereof pivotally secured as at 33 to the frame 11 and a secondary lever arm 34 having one end thereof pivotally secured as at 35 to the other end of the primary lever arm 31. The power-operated saw means 30 includes a circular saw 38 mounted for rotation in a plane parallel to the plane of movement of the primary and secondary lever arms 32, 34 by means of a rotary shaft 39 rotatably Journalled on the other or free end of the secondary lever arm 34. Affixed to the end of the rotary shaft 39 opposite to the saw 38 is a pulley 40. Pulley 40 has a belt 41 entrained thereon and on a second pulley 42 carried by the output shaft 43 of a fluid-operated motor 44. Fluid-operated motor 44 is connected to a source of fluid under pressure, not shown, and serves to impart rotation to the saw 38.

Power means for imparting independent pivotal movements to the primary and secondary lever arms 32, 34 about their respective pivotal axes 33, 35 includes first and second fluid-operated double-acting rams 48, 49 respectively. First power-operated ram 48 has one end thereof connected to the frame 11 and the free end of a piston-equipped rod connected to the primary lever 32 in spaced relation to the pivotal connection 33 and is operatively connected to a source of fluid under pressure and control mechanism, not shown, so as to impart pivotal movements to the primary lever 32 about its pivotal axis 33. Secondary ram 49 has one end of the cylinder thereof connected to a laterally projected arm 50 extending from the upper end of the primary lever arm 32 adjacent the pivotal connection 35 of secondary lever arm 34. A piston-equipped rod or ram 49 has the free end thereof connected to the secondary lever arm 34 in spaced relation to the pivotal connection 35 to primary lever arm 32 and ram 49 is operatively connected to a source of fluid under pressure and control mechanism, also not shown, to impart pivotal movements to the secondary lever arm 34 about its pivotal axis 35 independently of the primary lever arm 32, see FIG. 5.

For the purpose of imparting mobility to the pulpwood slasher 10 there is provided a prime mover indicated generally by the numeral 55. Prime mover 55 is in the nature of a materials-handling device commonly known in the trade as a loader and includes a power-operated boom 56 to the free end of which is attached a power-operated clam-type grapple 57. Prime mover or loader 55 is normally utilized to handle felled pulpwood logs to move same into position for further

processing into shorter lengths and subsequent loading of such short lengths onto transporting means such as trucks or the like. In the present application prime mover or loader 55 serves to pivotally mount one end of the frame 11, as at 60 in FIGS. 1–3, and support same for movements to a desired location of operation of the pulpwood slasher 10. That is, frame 11 may be moved to an elevated position about the pivot connection 60 by the boom and grapple 56, 57 respectively. When the slasher 10 is moved to its desired position frame 11 is again lowered to a generally horizontal position wherein laterally spaced supporting legs 61 adjacent the outer end of frame 11 come into engagement with the ground. A pair of hydraulically operated outrigger stabilizing devices carried by the rear end portion of the prime mover 55 provides added stability to the pulpwood slasher during operation thereof.

OPERATION

A typical operation of the processing of jackpine logs into convenient lengths consists of first moving the felled logs into a convenient position adjacent the pulpwood slasher 10 by means of material-handling devices, commonly known in the trade as skidders. When a sufficient supply of logs is moved into position, the boom and grapple 56, 57 respectively of the prime mover 55 are utilized to select a plurality of logs 65 from the supply and move same into position on the supporting surface 13, within the cradle 15, with the butt ends thereof adjacent the butt plate 20. Thereafter, cylinder 24 is actuated to cause the butt plate 20 to move longitudinally of the frame 11 on the rails 23, toward the logs 65, so as to index or even the butt end of the logs 65 (see FIG. 2). It will be noted, that prior to indexing or evening of the logs 65 that the movable jaws of the grapple 57 are moved to a released position such as indicated in FIG. 5 of the drawings. A spring-loader cable or the like 66 extending between the movable jaws of the grapple 57 is caused to engage the logs 65 sufficiently to permit slight axial movement thereof during the indexing or evening operation and upon completion of such operation increased pressure exerted by the boom 56 securely positions the logs 65 for further sawing operations. When the logs 65 have been indexed or evened and securely clamped in place within the cradle 15 an operator has merely to supply fluid under pressure to the hydraulic motor 44 to cause rotation of the circular saw 38 and thereafter actuate one or the other of the first and second rams 48, 49 respectively to cause the saw 38 to move from the position illustrated in FIG. 1 of the drawings to the positions of that illustrated in FIGS. 3, 5 of the drawings. It will be appreciated, that actuating of the rams 48, 49 either singly or in unison permits the operator of the pulpwood slasher 10 to cause the saw 39 to approach the logs 65 positioned within the cradle 15 from any given angle desired through 180° of arc relative to the supporting surface 13 in its plane of movement. Such versatility of movement allows the operator to compensate for any adverse conditions presented as the saw moves transversely of the logs 65 to severe same. When the saw 38 has moved to the position of FIG. 5, wherein the logs 65 have been completely severed from their remaining portions, the first ram 48 may be actuated in an opposite direction to remove the primary arm 32 to its position of FIG. 1. In this manner saw 38 is removed generally vertically from the area of the cut ends and their remaining portions to prevent pinching and binding or damage to the circular saw blade 38 on its return movement. When the primary lever arm 32 has returned to its position of FIG. 1 second ram 49 may be actuated in a reverse direction and primary arm 34 returned to its initial position for subsequent cutting action. It will be noted, by reference to FIGS. 2, 3 particularly, that the plane of movement of the circular saw 38 is positioned between a spaced pair of the bolsters 12 so that the adjacent end of the remaining portions of logs 65 are supported on the outermost bolster 12 upon completion of the cut through each individual log 65. In this manner, undue pinching and binding or damage to the saw 38 is minimized and the remaining portions of the logs 65 are conveniently positioned for subsequent movement onto the cradle 15. Upon completion of the cut through the logs 65 by the power-operated saw means 30 the operator again causes the movable jaws of the grapple 57 to grasp the cut pieces of the logs within the cradle 15 and move same to a storage pile immediately adjacent one side of the slasher 10 or alternatively to a truck or the like for transport to a processing plant. If the cut logs 65 are to be stored adjacent the slasher 10 it will be appreciated that the prime mover 55 may be utilized to move the slasher 10 to a new position when the height of the stored pile of cut pulpwood exceeds a given amount by merely moving the rigid frame 11 toward its transport position as above described. It will be obvious to those skilled in the art that the above-described pulpwood slasher is extremely versatile in operation and requires but a minimum of space to operate in. In addition, a compact and lightweight device has been provided which is relatively inexpensive to manufacture and operate.

What is claimed is:

1. A pulpwood slasher comprising:
   a. a rigid longitudinally extended frame defining a log-supporting surface;
   b. a butt plate adjacent one end of said frame lying in a plane perpendicular to said log-supporting surface and engageable by one end of logs supported by said surface;
   c. power-operated saw means including mounting means adjacent the other end of said frame mounted for movements of said saw means in a plane perpendicular to said log-supporting surface and at any given angle in said plane through 180° of arc relative to said log-supporting surface, said mounting means including
      1. a primary lever arm having one end pivotally secured to said rigid frame for movements in a plane perpendicular to the longitudinal axis of said supporting surface;
      2. a secondary lever arm having one end pivotally secured to the other end of said primary arm for pivotal movements in a plane parallel to the movements of said primary arm; and
      3. said power-operated saw means being mounted on the other end of said secondary arm for common movements therewith;
   d. power means for imparting said movements to said mounting means.

2. The structure of claim 1 in which said power means for imparting movements to said mounting means is connected to impart independent pivotal movements to said primary and secondary lever arms.

3. The structure of claim 2 in which said power-operated saw means is a circular saw mounted for rotation in a plane parallel to said plane of movement of said primary and secondary lever arms.

4. The structure of claim 2 in which said power means for imparting independent pivotal movements to said primary and secondary lever arms includes a first fluid-operated double-acting ram connected between said primary arm and said rigid frame and a second fluid-operated double-acting ram connected between said primary and secondary lever arms.

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