J. F. ROCHE AND A. MacDONALD.

LOG SAWING MACHINE.

APPLICATION FILED DEC. 11, 1917.

1,316,743.

Patented Sept. 23, 1919.

2 SHEETS—SHEET 1.

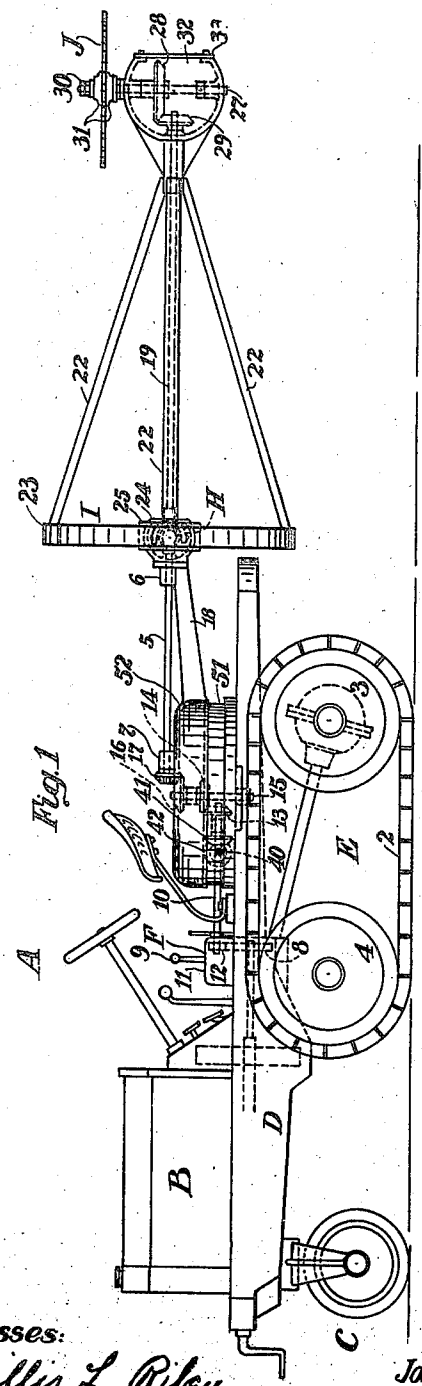


Fig. 1

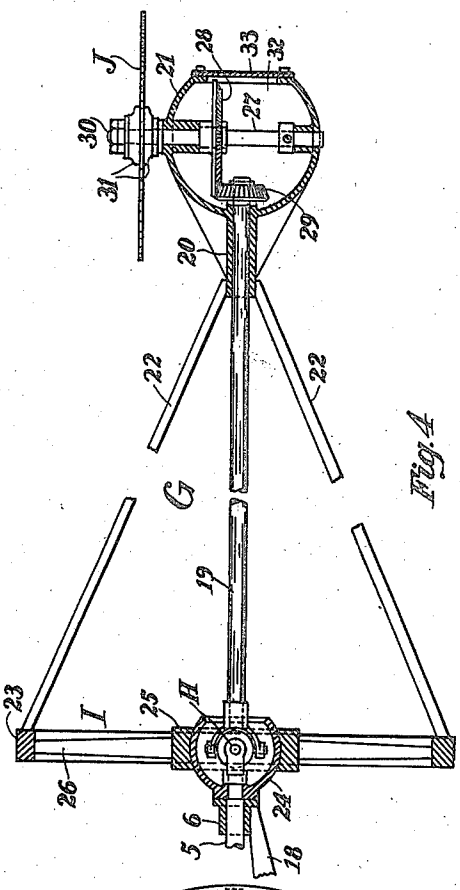


Fig. 4

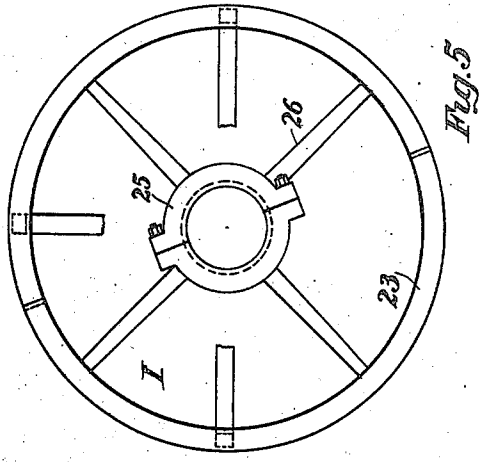


Fig. 5

Witnesses:

Willis L. Riley.

Stella L. Hackenberger

Inventors:

John F. Roche And Alan MacDonald.

Per: L. Bradbury.

Attorney.

J. F. ROCHE AND A. MacDONALD.

LOG SAWING MACHINE.

APPLICATION FILED DEC. 11, 1917.

1,316,743.

Patented Sept. 23, 1919.

2 SHEETS—SHEET 2

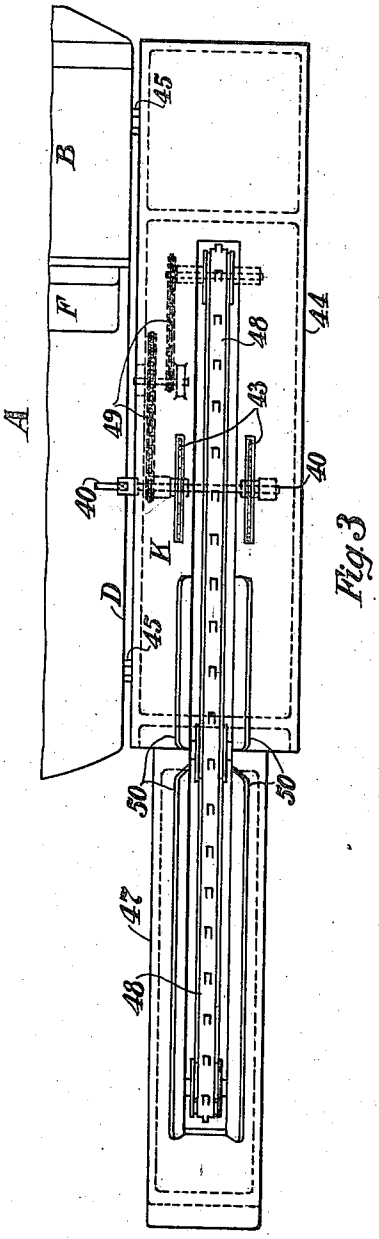


Fig. 3

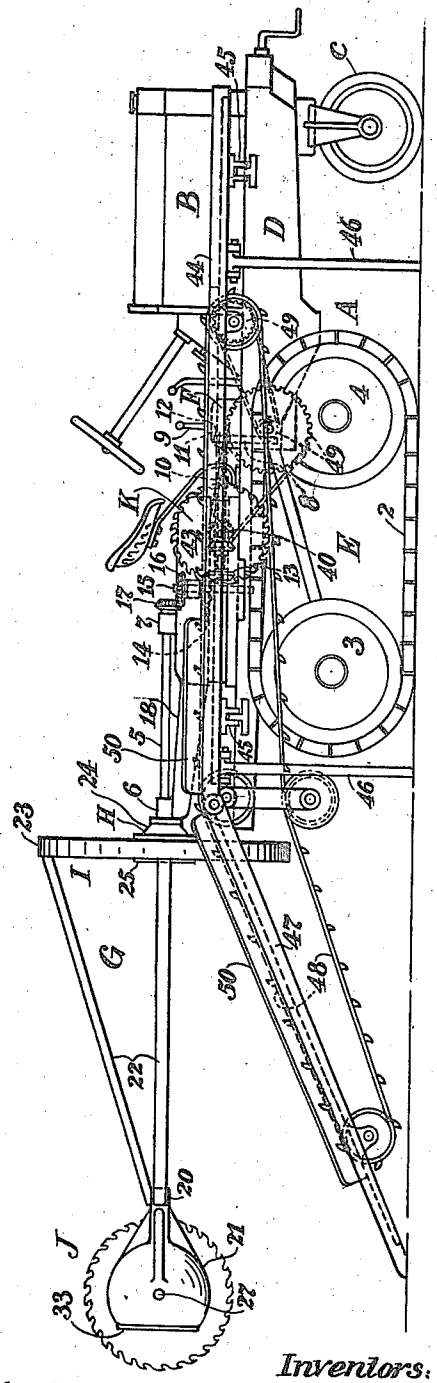


Fig. 2

Witnesses:

Willis L. Riley.

Stella L. Taschenberger

Inventors:

John F. Roche And Allan MacDonald.

Per: F. B. Bradbury.

Attorney.

UNITED STATES PATENT OFFICE.

JOHN F. ROCHE AND ALAN MacDONALD, OF ST. PAUL, MINNESOTA.

LOG-SAWING MACHINE.

1,316,743. Specification of Letters Patent. Patented Sept. 23, 1919.

Application filed December 11, 1917. Serial No. 206,577.

To all whom it may concern:

Be it known that we, JOHN F. ROCHE and ALAN MacDONALD, citizens of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in Log-Sawing Machines, of which the following is a specification.

The primary object of this invention is the saving of time, hand labor and expense in the sawing of timber and cutting logs into three dimension material. A further object is to provide in combination with a self propelled vehicle sawing means driven by the prime mover which propels the vehicle and which may be moved in any direction about a longitudinal axis, so that the cutting tool or saw may be adjusted to cut the timber at any desired angle and elevation.

With these and other objects in view, which will be apparent from the following description, our invention comprises the features of construction and combination of parts hereinafter more particularly described and claimed.

In the accompanying drawings forming part of this specification, Figure 1 is a side elevation of our invention; Fig. 2 is another side elevation looking at the opposite side of the machine from that illustrated in Fig. 1; Fig. 3 is a plan of part of our invention; Fig. 4 is a central longitudinal section of a detail showing the construction of part of the timber sawing apparatus, and Fig. 5 is an end elevation of the structure illustrated in Fig. 4.

In the drawings, let A indicate a self propelled motor vehicle having the usual prime mover B, forward steering wheels C, main frame D and rear traction elements E. The rear traction elements which are adapted to be driven by the prime mover in the usual manner through the ordinary intermediate transmission mechanism F are preferably in the form of what are commonly termed caterpillar drives having tread belts 2 passing around driven sprockets or wheels 3 and 4, which are journaled upon the frame of the structure. These caterpillar treads enable the vehicle to be moved over soft ground and through the woods, so that the device may be placed close to standing trees convenient for using the sawing apparatus G as will be hereinafter described for cutting standing and down timber.

The sawing apparatus G comprises a main longitudinal drive shaft 5, which is journaled in a pair of bearings 6 and 7 formed on part of the frame D of the vehicle. The forward end of this shaft is connected to be driven by one of the gears such as 8 of the transmission mechanism F, so that in one position of the gear shifting lever 9, which is employed for changing the speed at which the caterpillar drives are driven, the driving gear 8 is thrown into operation and revolved, causing the shaft 5 to be driven at suitable speed through the use of connected mechanism as follows:

Journaled on the frame of the structure is another revoluble longitudinal shaft 10, one end of which projects and is journaled in the transmission mechanism housing 11 and carries a toothed pinion 12, which meshes with the gear 8. The outer end of shaft 10 carries a bevel gear 13, the teeth of which mesh with bevel gear 14 carried on a vertical counter shaft 15, which is also journaled on the frame of the structure. This counter shaft 15 is connected with the main longitudinal shaft 5, by a pair of intermeshing bevel gears 16 and 17. Thus driving motion is transmitted from the gear 8 of the transmission mechanism to the main drive shaft 5.

The shaft 5 extends rearwardly of the vehicle, its bearing 6 being mounted upon suitable supporting arms 18. Coupled to the rearward extension of shaft 5 by a suitable universal joint H is a freely swinging extension 19 of the shaft member 5, the freely swinging end of which is journaled in the bearing 20 of a globular casing 21. This bearing and casing are rigidly supported by a plurality of arms 22, which radiate forwardly and are connected at their outer ends to the annulus 23 of a circle I, said circle being mounted concentrically to the universal coupling or joint H in the following manner: Arranged on the outer ends of the arms 18 and about the axis of the shaft 5 is a stationary globular shell 24, the outer surface of which is partly spherical. Upon this partly spherical surface is journaled a split collar 25 and radiating from said collar are a plurality of spokes 26, the outer ends of which carry the annulus 23.

Thus the bearing 20 is supported by the braced annulus 23 and is free to be located and moved with the shaft 19, but at all times is prevented from moving longitudinally on said shaft. The casing 21, which is formed integral with the bearing 20 has a partly spherical contour and within this casing is journaled a counter spindle 27, which is disposed at right angles to shaft 19 and projects from the casing at one end. This projecting end of shaft 27 carries the circular saw or cutting tool J. The annulus with its arms and outer bearing together with the swinging extension 19 of the shaft member 5 constitutes a bodily swinging extension by which the saw is carried.

The spindle 27 is driven by the shaft 19 through intermeshing bevel gears 28 and 29 respectively mounted upon members 27 and 19 in the casing 21. The saw or cutting tool J is detachably mounted upon the spindle 27 by the nuts and washers 30 and 31 in the usual manner. The globular casing 21 has an opening 32 in its side through which access is gained for inspecting the gears within said casing and lubricating them. This opening is normally closed by the cover plate 33. In use the cutting tool which may be of the desired diameter can be guided at any elevation or angular position by hand for cutting standing or down timber and the structure described produces a rigid and efficient support for the cutting member and its operating parts. The universal joint between the swinging and stationary shaft members 19 and 5 may be of any suitable construction, the ordinary type of universal joint being illustrated in the drawings.

Constructed as part of the main frame D is a turret casing made in two parts 51 and 52, the former being rigid with said frame and the latter revoluble in a horizontal plane on said casing member 51. Within this particular part of the frame D, namely the turret, the shafts 10, 15 and 40 extend and the gears 13, 14, 16 and 17 and 41 and 42 are placed. The bearings 6 and 7 and arms 18 are carried by the revoluble member 52, thus permitting the shaft member 5 to swing in an arc at the rear of the machine and permitting a wider range or swath of the cutter J.

The vehicle is also provided with auxiliary sawing or cutting means K for cutting logs into three dimension stock, such as railway ties for illustration. This auxiliary sawing mechanism has a transverse driving shaft 40 journaled upon the frame D of the vehicle and driven by the driving shaft 10 through intermediate intermeshing bevel gears 41 and 42. The outer end of the transverse shaft 40 carries circular saw blades 43 placed over a table 44, said table being hinged at 45 to fold upon the side of frame D or otherwise mounted. Suitable supporting members or legs 46 hinged to the table serve to support the outer portion of the table upon the ground in horizontal position. At the rearward end of the table is an inclined skid or carrier 47 up which the logs to be cut are moved by a suitable log chain conveyer such as 48 which is driven through speed reducing mechanism 49 connected with the shaft 40. Suitable adjustable guides 50 placed on the table serve to guide the logs in proper position in contact with the saws to be cut thereby. The carrier mechanism and rotary saw blades 43 may be disconnected from operation by separating the gears 41 and 42. The timber cutter J may also be disconnected when desired by separating the gears 16 and 17. In operation the machine may be moved from place to place and conveniently positioned for use either for sawing standing or down timber or for cutting logs into three dimension stock.

In accordance with the patent statutes, we have described the principles of operation of our invention, together with the apparatus which we now consider to represent the best embodiment thereof, but we desire to have it understood that the construction shown is only illustrative, and that the invention can be carried out by other means and applied to uses other than those above set forth within the scope of the following claims.

Having described our invention, what we claim as new and desire to protect by Letters Patent is:

1. In combination a bearing comprising a partly spherical housing, a pair of shafts having universal connection within said housing, the outer face of said housing being concentric with the universal pivotal point of connection of said shafts, an annulus having a bearing portion fitted upon the outer face of said housing, a bearing for one of said shafts at a point remote from said housing, rigid connecting members extending between the annulus and the bearing, a circular saw supported from the bearing and driving connections between the saw and the last named shaft.

2. The combination with a motor vehicle and its gear casing, of a turret, a shaft vertically and centrally disposed within said turret, means for driving said shaft from the gear casing, a rearwardly projecting rigid arm carried by the rotative member of the turret, alined bearings upon said arm and turret, a horizontally disposed shaft journaled therein, bevel gearing between the vertical shaft and the horizontally disposed shaft, the bearings upon the rigid arm including a hollow segment of a sphere, a swinging shaft extension having universal connection with the horizontal shaft within said casing, an annulus having a bearing portion fitted upon the outer face of said

casing, a bearing for the swinging shaft extension remote from said casing, rigid connecting members between the annulus and the bearing, a housing supported from the bearing, a spindle journaled therein and lying substantially at right angles to the swinging shaft extension, bevel gearing between the swinging shaft extension and the spindle and a rotative cutting element carried by said spindle.

In testimony whereof, we have signed our names to this specification.

JOHN F. ROCHE.
ALAN MacDONALD.