C. A. STRAIT.

STUMP PULLER.

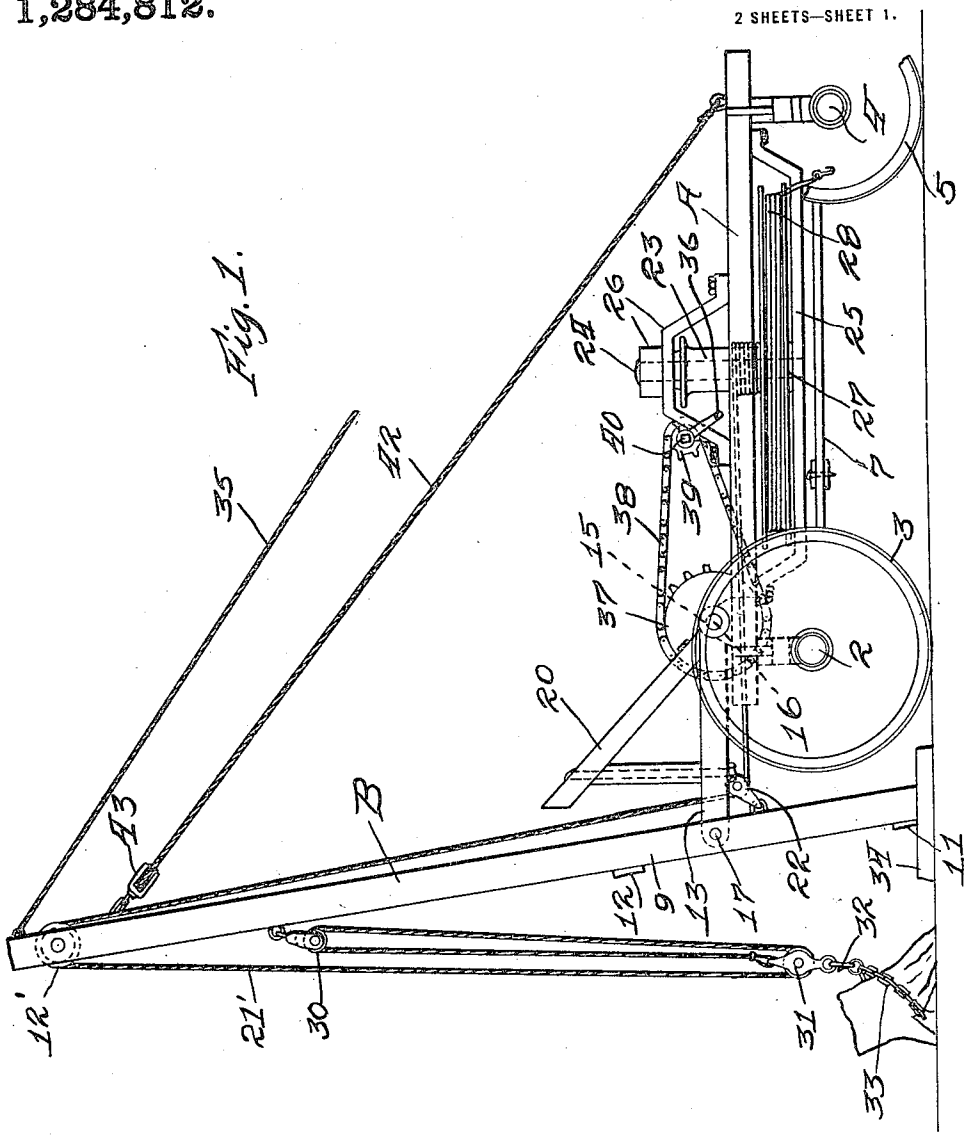
APPLICATION FILED OCT. 2, 1915.

1,284,812.

Patented Nov. 12, 1918.

2 SHEETS—SHEET 1.

Fig. 1.



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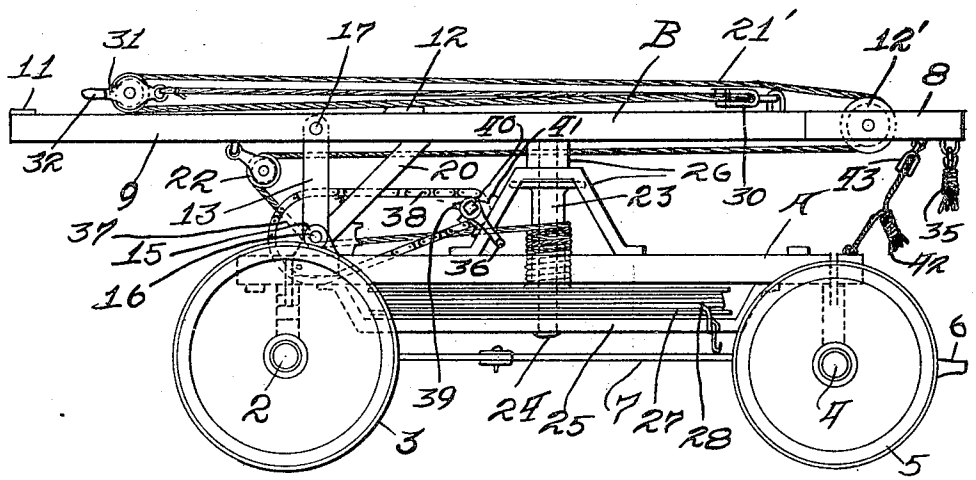


Fig. 2.

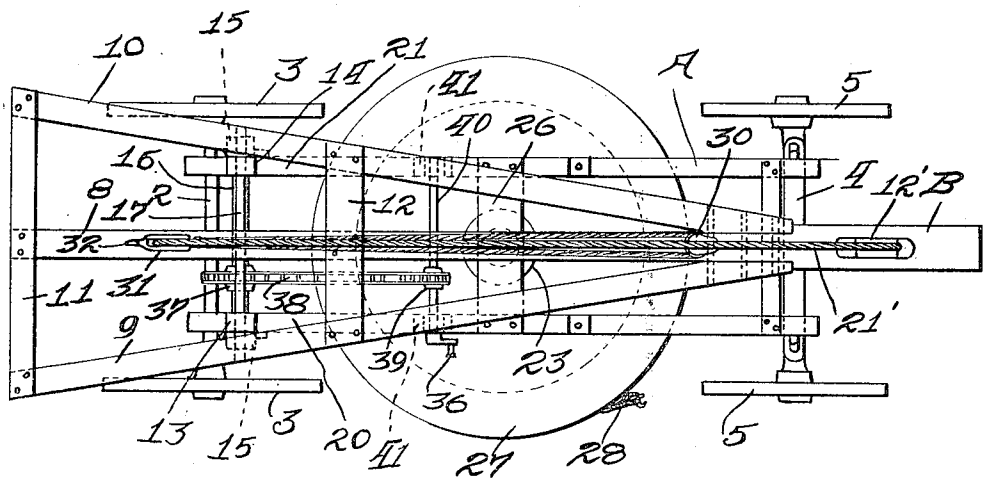


Fig. 3.

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UNITED STATES PATENT OFFICE.

CLAUDE ALVAN STRAIT, OF ST. PAUL, MINNESOTA.

STUMP-PULLER.

1,284,812. Specification of Letters Patent. Patented Nov. 12, 1918.

Application filed October 2, 1915. Serial No. 53,691.

To all whom it may concern:

Be it known that I, CLAUDE ALVAN STRAIT, a citizen 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 Stump-Pullers, of which the following is a specification.

This invention relates more particularly to that class of stump pullers, in which a portable derrick is employed for lifting the stumps bodily out of the ground. The improvements involved relate to features of construction and novel combinations of parts whereby efficient results are accomplished and simplicity of construction is produced.

In the accompanying drawing forming part of this specification, Figure 1 is a side elevation of my invention shown in the act of extracting a stump from the ground; Fig. 2 is another side elevation, the parts being folded for convenience in transportation, and Fig. 3 is a plan of my invention when the parts are in the position illustrated in Fig. 2.

A indicates the frame or body of a vehicle of rectangular shape having the usual rear axle 2 and carrying wheels 3. 4 is the front axle and 5 the front steering wheels. 6 is the usual pole by which the vehicle is drawn and 7 the reach.

Hingedly mounted upon the rearward portion of the frame or body is a mast B composed of a central longitudinal beam 8, two side braces 9 and 10, and two cross braces 11 and 12, which are securely fastened to the mast and side braces. The lower end of the mast carries the cross brace 11 and the upper end formed by the central beam 8 carries a sheave 12′ and forms the top. A portion of the mast intermediate of its ends is hinged by a pair of links 13 and 14 upon journal bearings 15, which are bolted or otherwise fastened to the sides of the frame or body A. The ends of the links 13 and 14 are secured respectively to the bearing blocks 15 by a shaft 16 and to the mast by a shaft 17. Secured rigidly to the links 13 and 14 are a pair of rests 20 and 21 upon the free ends of which the cross brace 12 presses when the mast is tilted back to support the mast upon said links, but permitting the mast to tilt forward past vertical position when the mast is in superior or elevated position. Carried by the mast are suitable blocks and tackle, the cable 21′ of which travels over the sheave 12 and pulley 22 and thence passes around a vertically disposed drum 23, which is carried by the frame A. The drum 23 is secured to a vertically disposed shaft 24, which is journaled by its lower end in a suitable supporting member 25 secured to the frame A and by its upper end in a yoke 26, which is mounted upon said frame. The lower portion of the shaft 24 immediately below the drum upon which the cable 21′ is secured and winds carries a large drive pulley 27 upon which a power cable 28 is wound. By pulling upon the power cable 28 the shaft 24 is revolved, causing the drum 23 to wind the cable 21′ thereon and impart a forceful lifting movement thereto. In addition to multiplying the power in the manner stated, the blocks and tackle additionally increase the lifting effort imparted to the stump which is being extracted. The blocks and tackle are of usual construction, a single pulley 30 being secured to the upper portion of the mast and another pulley 31 carrying the hook 32 being disposed, so that the hook can be secured to a chain such as 33 passing around the stump. The end of the cable near the extremity opposite that which is attached to the drum 23 is secured to the pulley 31.

The inclination of the mast outwardly over the stump precludes the mast from tilting backwardly and folding upon the frame A during the lifting effort which is imparted by the drum 23 to the blocks and tackle if the chain slips from engagement with the stump. In use a suitable support such as planking 34 is placed below the lower end of the mast on the ground. A guy wire or cable 35 is attached to the upper end of the mast, extended backwardly over the vehicle and anchored in the ground so as to sustain the mast in elevated position. It is not necessary to stake the vehicle to the ground the mast being sustained wholly by the guy 35. The loosely connected links 13 and 14 permit the mast to seat itself at any suitable elevation within limited range upon the ground or foundation which is placed below its lower end on the ground and the tilting of the mast forwardly over the work to be performed imparts stability to the apparatus whereby a forceful movement is applied by the hoisting apparatus without any danger of the mast folding back unintentionally upon the vehicle. The links 13 and 14 act as a stay only to a limited extent

and their rests 20 and 21 perform the function of tilting the links and assisting in supporting and steadying the mast as the latter is folded down.

When it is desired to move the apparatus from one position to another in the field, the support 34 is withdrawn from below the lower end of the mast and by means of turning the crank 36, the mast is quickly turned back into folded position as illustrated in Fig. 2 with its body portion resting upon the yoke support 26. The folding of the mast is accomplished by a sprocket wheel 37 mounted upon the shaft 16 and a belt chain 38 passing over the sprocket wheel and over a sprocket pinion 39, which is mounted upon a countershaft 40 to which the crank arm 36 is attached. The shaft 40 is suitably journaled in bearings 41 carried by the support 26. By reversing the movement of the crank handle 36 the mast is raised into elevated or superior position. When in superior position and it is desired to start the mast moving until its lower end is free, an auxiliary tilting means is employed in the form of a cable 42 attached by its opposite ends to the forward portions of the sides of the frame or body and its intermediate portion passing freely over a pulley or sheave 43 secured to the upper end of the mast. This cable 35 when pulled and after the foundation 34 is removed starts the mast backwardly, so that it can be more easily swung by the handle 36. The cable also acts as an emergency guy for the mast when the latter is in superior position. During the transportation of the apparatus the mast can be held in horizontal position by the auxiliary tilting cable 42. The construction employed enables the application of the parts to any usual form of running gear such as commonly used for farm and road work.

In accordance with the patent statutes, I have described the principles of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, but I 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 my invention what I claim as new and desire to protect by Letters Patent is:

1. A portable derrick, comprising, in combination, a supporting frame, a mast, and a link member pivotally connected at one end to said frame adjacent to an extremity thereof and at the other end similarly connected to said mast between its ends, whereby said mast may be swung into elevated position and tilted forwardly past vertical position, at a distance from said supporting frame, said link member being provided with an outstanding stop separable from the mast when the latter is tilted into said forward position and adapted to assist in supporting the mast when the mast is swung backwardly.

2. A portable derrick, comprising, in combination, a supporting frame, a mast, a link member pivotally connected at one end to said frame adjacent to an extremity thereof and at the other end similarly connected to said mast between its ends to permit the mast being swung up into outwardly inclined elevated position, and means for supporting the upper end of said mast in said upstanding inclined position, said link member being provided with a stop on one side separable from the mast when the latter is swung in outwardly inclined position and adapted to assist in supporting the mast when the latter is swung back.

3. A portable derrick, comprising, in combination, a supporting frame, a mast, a link member movably connected at one end to said frame adjacent to an extremity thereof and at the other end similarly connected to said mast between its ends, whereby said mast may be swung into elevated position at a distance from said supporting frame, said link having a laterally disposed rest to assist in supporting said mast in down turned position at a distance above said supporting frame and rigidly upon said link when swinging up, said rest being separable from the mast to allow the latter to incline forwardly when elevated and being arranged to assist in supporting the mast upon the link when the mast is swung down into horizontal position.

In testimony whereof, I have signed my name to this specification.

CLAUDE ALVAN STRAIT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."