No. 742,447. PATENTED OCT. 27, 1903.

W. P. KIDDER.

TREE CLIMBING MOTOR.

APPLICATION FILED APR. 4, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

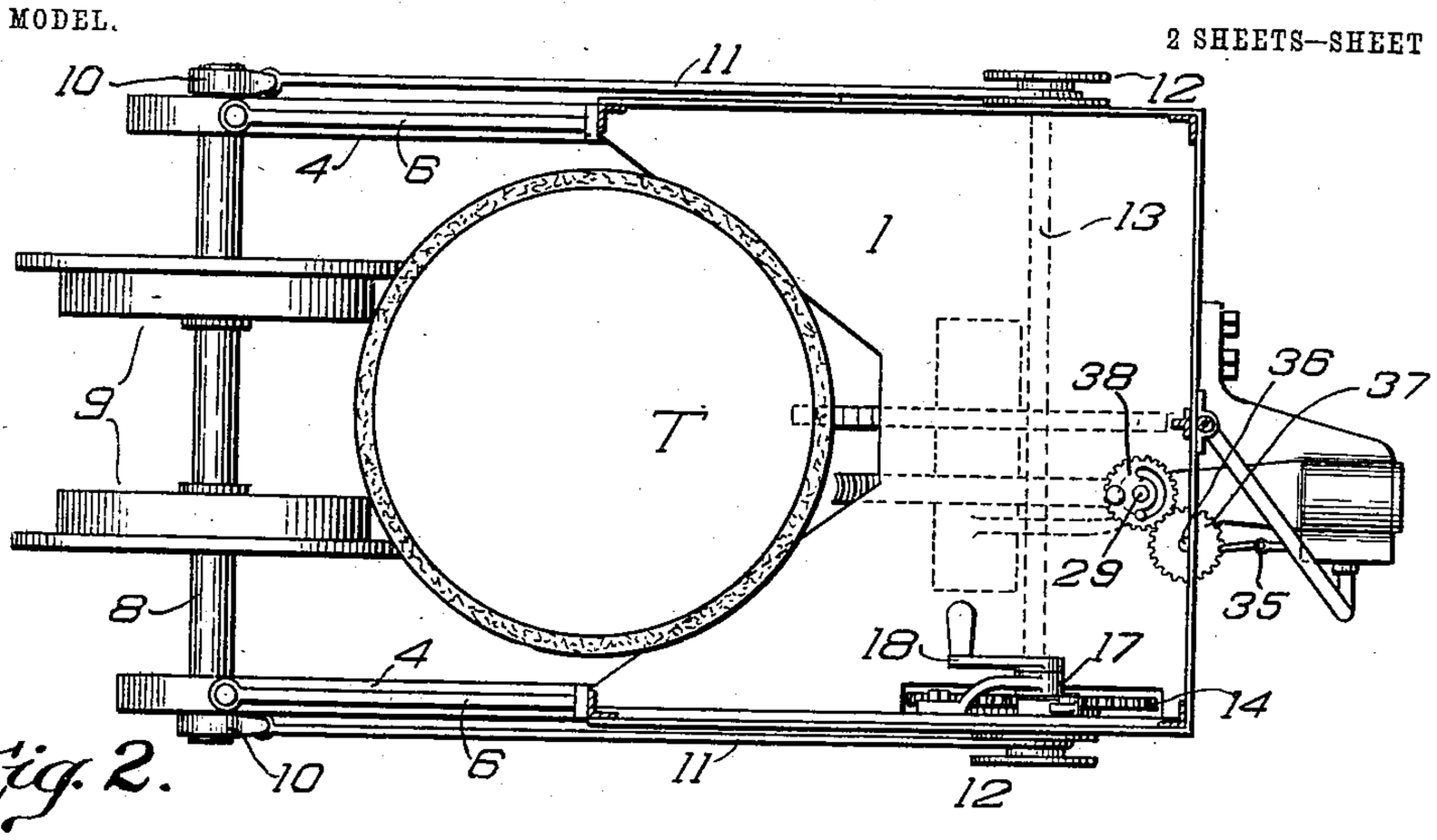

Fig. 2.

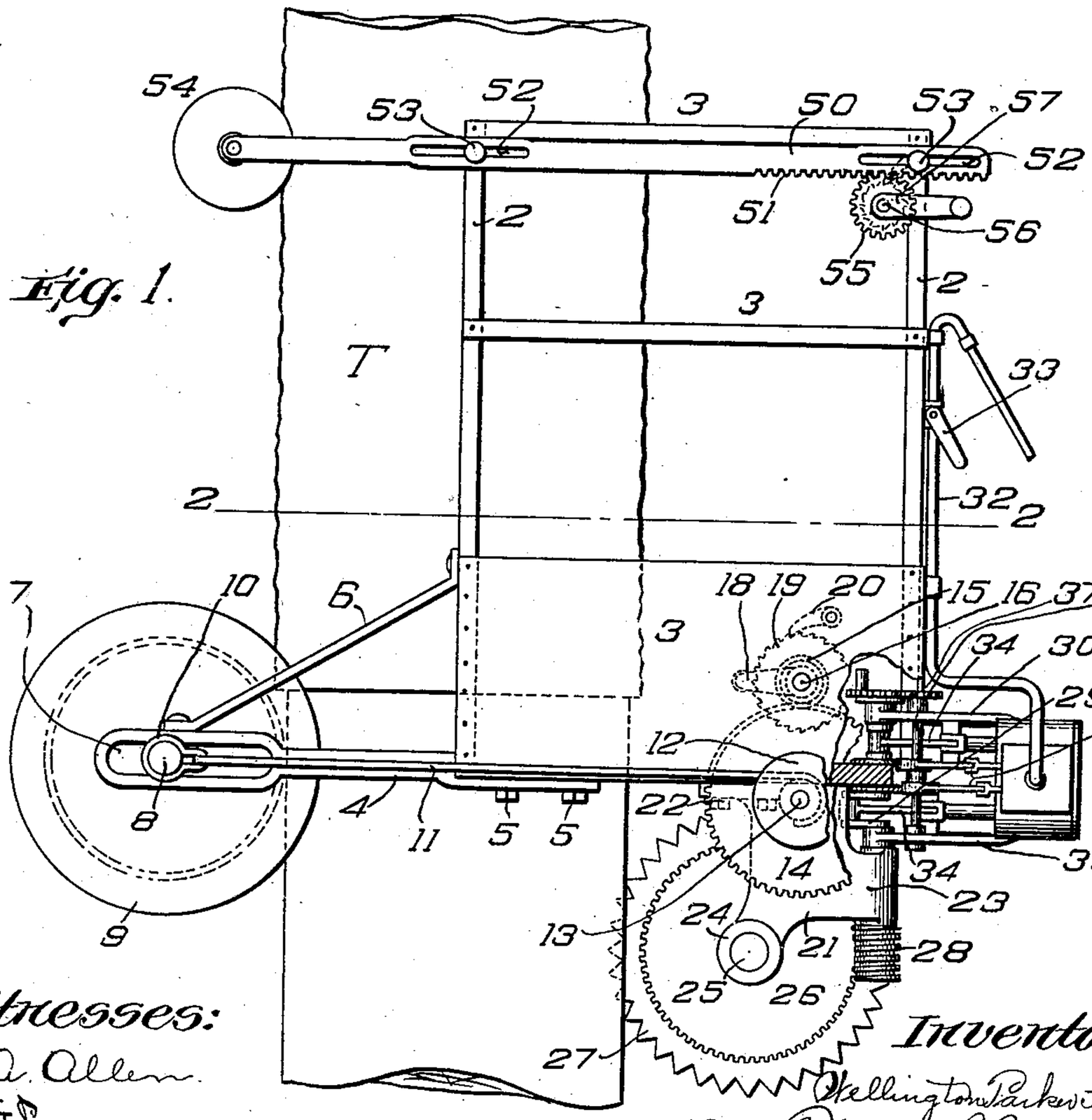

Fig. 1.

Witnesses:
E. A. Allen.
W. F. Rooney.

Inventor:
Wellington Parker Kidder,
by Edwin L. Reich
Attorney.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

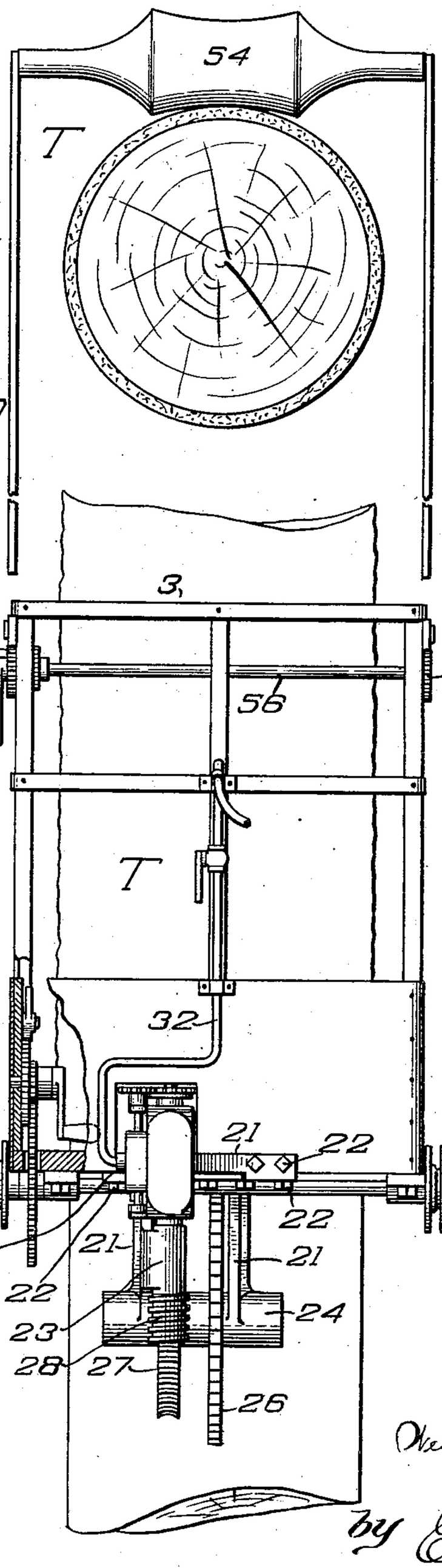

Fig. 3.

Witnesses:

E. A. Allen.

W. E. Clemens.

Inventor:

Wellington Parker Kidder

by Edwards S. Beach

Attorney.

No. 742,447. Patented October 27, 1903.

UNITED STATES PATENT OFFICE.

WELLINGTON PARKER KIDDER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO FRANK H. GOODYEAR AND GEORGE E. MATTHEWS, TRUSTEES, OF BUFFALO, NEW YORK.

TREE-CLIMBING MOTOR.

SPECIFICATION forming part of Letters Patent No. 742,447, dated October 27, 1903.

Application filed April 4, 1903. Serial No. 151,085. (No model.)

To all whom it may concern:

Be it known that I, WELLINGTON PARKER KIDDER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Tree-Climbing Motors, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation of my new tree-climbing motor in place on a standing tree-trunk, a portion of the motor and motor-carriage being broken away and sectioned for greater clearness. Fig. 2 is a view, partly in section on 2 2 of Fig. 1, looking down. Fig. 3 is an elevation of the rear side of the motor in place on a tree-trunk, a portion of the motor-carriage being broken away and sectioned for greater clearness. Fig. 4 is a fragmentary view looking down on the upper guide-roller and its supporting-arms.

The object of my invention is to devise a motor and carriage adapted to ascend and descend standing trees (or other vertical objects, like flagpoles, &c.,) and to carry one or more persons up and down the tree-trunk.

One of the main uses contemplated for my invention is the removal of bark from standing trees.

In the drawings illustrating the principle of my invention and the best mode now known to me of applying that principle, T represents a standing tree-trunk, and 1 is the floor of the motor-carriage, which is provided with vertical supports 2 and suitable cross-supports 3. To the floor of the carriage parallel arms 4 are attached, as at 5, and extend rearwardly from the opposite lower corners of the carriage any desired distance, the outer ends of the arms 4 being pressed to the carriage-frame by suitable supports 6. The outer end portions of arms 4 are provided with a lengthwise-extending slot 7, in which slots there is slidably mounted a transverse shaft 8, which carries between the arms 4 suitable trunk-engaging wheels or disks 9. A collar 10 is mounted on each end portion of transverse shaft 8, and to each collar there is attached a flexible strap or chain 11, each of which is wound up on a suitable drum 12, fast on the transverse shaft 13, which passes through the front portion of the motor-carriage.

Fixed on shaft 13 is a gear 14, which meshes with a pinion 15, fast on a stud 16, mounted in a bracket 17, which is attached to the motor-carriage frame. Stud 16 is provided with a fixed crank-handle 18, and stud 16 also is fast on it and ratchet 19, for which there is provided a pawl 20. By turning handle 18 pinion 15 is rotated to rotate gear 14, fast on shaft 13, whereby the drums 12 are compelled to take up the ropes 11 and pull wheels 9 hard against the opposed side of the tree. Pawl 20, coöperating with ratchet 19, holds wheels 9 properly against the tree-trunk. To the lower trunk-corner of the motor-carriage there is attached a large bracket 21, which is secured, as at 22, to the motor-carriage frame. The bracket 21 has a wing 23 in a transverse bearing 24, within which is mounted a transverse shaft 25, having fixed on it a gear 26 and also a serrated driving-wheel 27, which engages that side of the tree which is opposite the wheels 9. Driving-wheel 27 is dug into the bark or side of the tree in the ascent and descent of the motor and constitutes the propelling feature of the apparatus. Gear 26 meshes with a worm 28 on a crank-shaft which is mounted in the wing 23. This crank-shaft is indicated by 29. Parallel arms 30 hold engine 31 on the crank-shaft 29, their outer ends being enlarged for the passage therethrough of portions of the crank-shaft. A conduit 32 from an air-compressor or steam-engine or steam-boiler, for example, leads to engine 31 for operating it, conduit 32 being provided with a suitable cut-off valve 33. Crank-arm 29 is mechanically driven from engine 31 by the connecting-rods 34 of the engine, the slide-valve links 35 of which comprise eccentric-straps and eccentrics mounted on the vertical auxiliary shaft 36, which is provided with a fixed gear 37, which meshes with a gear 38, fast on the upper end of crank-shaft 29. The construction and operation of the engine, its connecting-rods, slide-valve, and slide-valve-actuating mechanism will be readily understood by all skilled in the art without particular description.

The engine operates to drive crank-shaft

29, and thus through gears 38 and 37 to rotate the shaft 36 and operate the slide-valves of the engine at the proper time. When crank-shaft 29 rotates, worm 28 is rotated, and thereby the shaft 25 rotates the serrated driver 27 and compels it to perform its work. The upper portion of the motor-carriage frame is provided with a pair of parallel slide-bars 50, each of which is serrated at its front end and provided with a pair of parallel slots 52, through which headed studs 53 project from vertical side pieces 2 of the motor-carriage frame. The rear ends of rack-bar 50 are connected by a therein-pivoted roller 54, which engages the same side of the tree that is engaged by the wheels 9. Teeth 51 of the rack-bars 50 engage with pinions 55 on transverse shaft 56, which is provided with a suitable handle 57. By turning handle 57 the rack-bars are moved in either direction to draw guide-roll 54 against the side of the tree-trunk to release it therefrom.

It will be plain that my new tree-climbing motor may be greatly modified in whole and in part without departure from my invention. It is intended to carry as a passenger up and down the tree-trunk the laborers who may be employed to remove bark from standing trees. The importance of removing bark from hemlock and oak trees without first felling them is set forth in my prior patent, No. 711,573, dated October 21, 1902, and in several pending applications.

What I claim is—

A tree-climbing motor, comprising, in combination, a suitable carriage-frame; a driver; an engine, operatively connected with the driver to rotate the same; and means for clamping the driver against the tree-trunk; and for guiding the carriage up and down the trunk.

In testimony whereof I affix my signature in presence of two witnesses.

WELLINGTON PARKER KIDDER.

Witnesses:
E. A. ALLEN,
M. E. COVENEY.