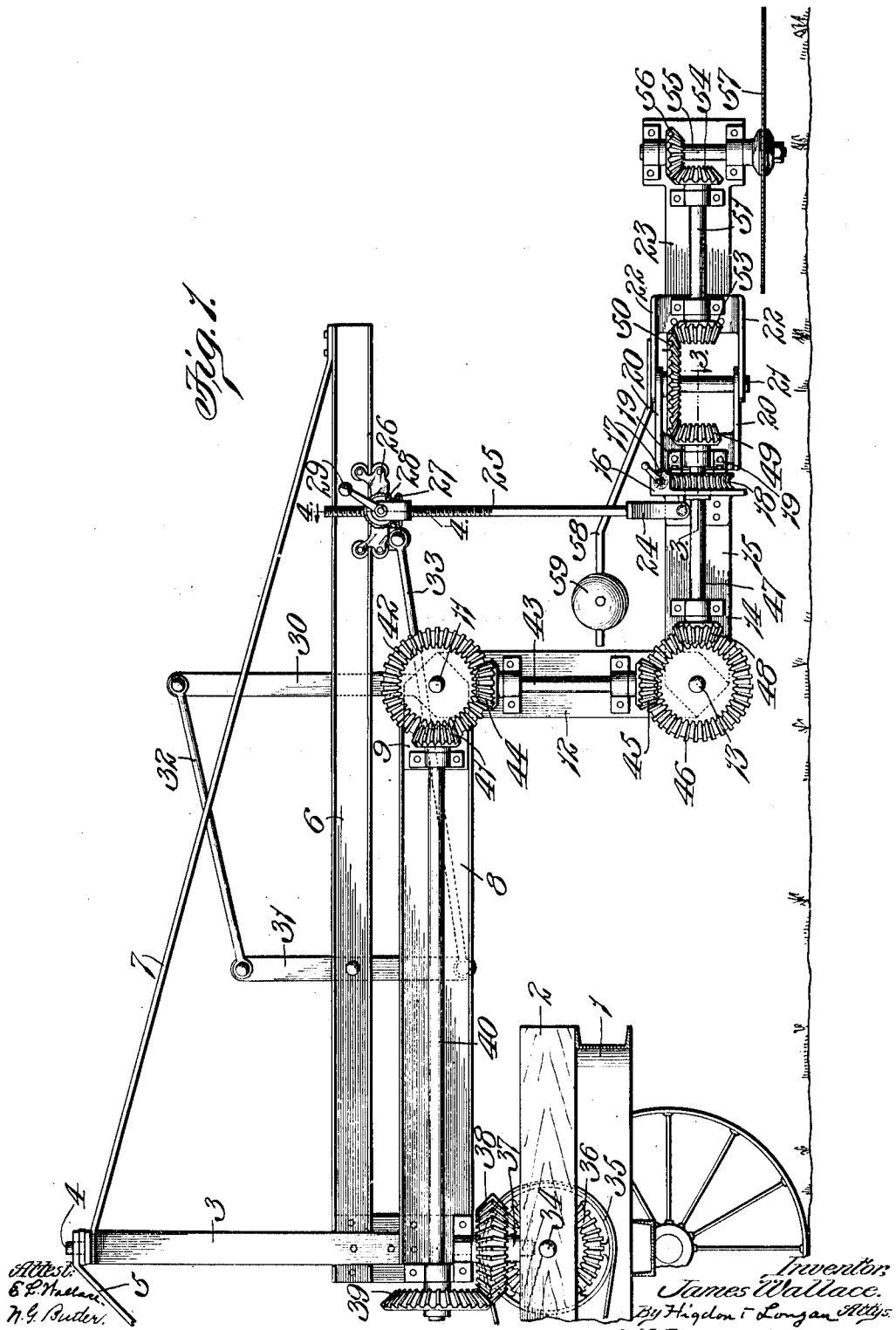


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APPLICATION FILED OCT. 2, 1911.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.

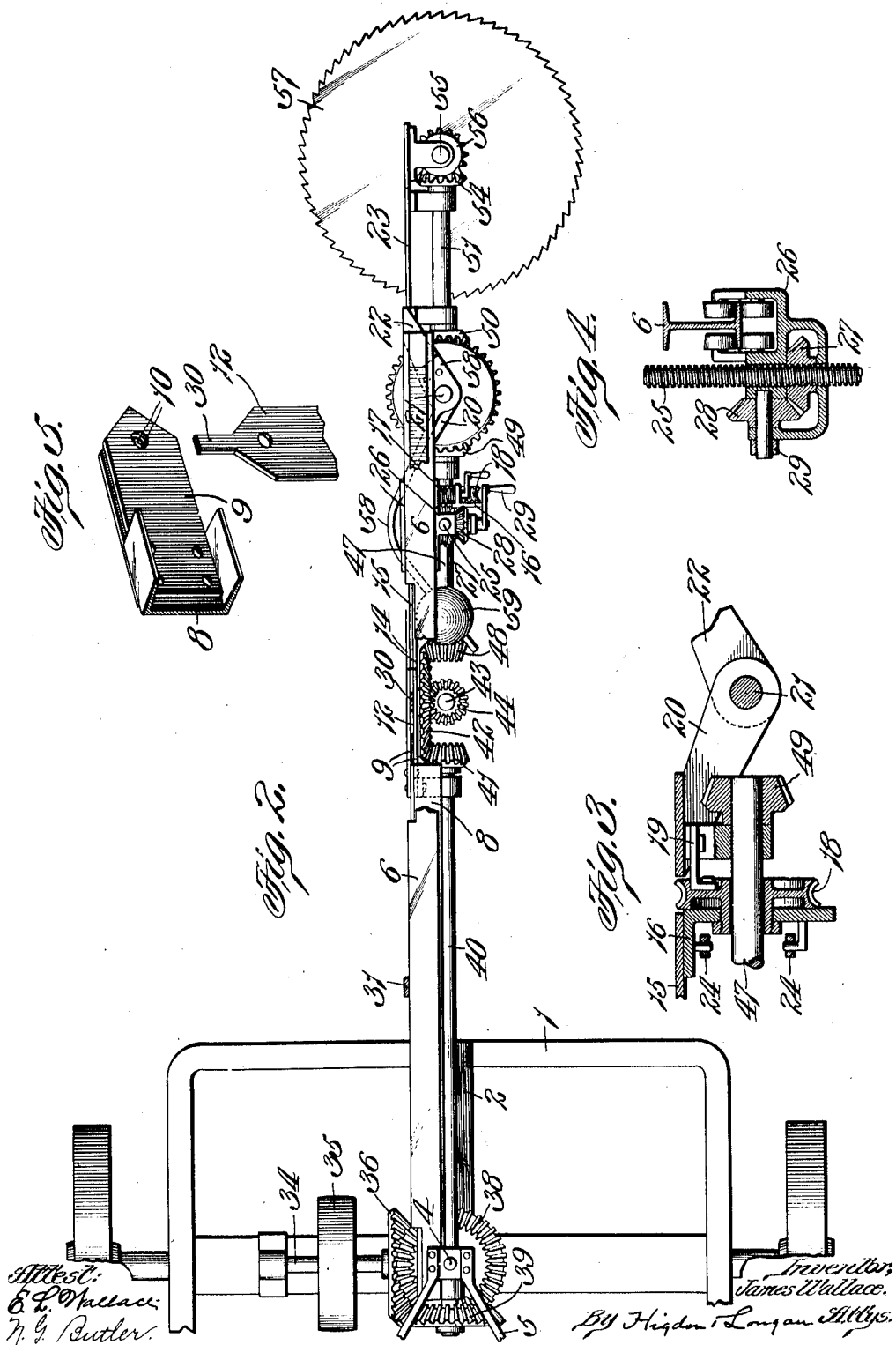


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UNITED STATES PATENT OFFICE.

JAMES WALLACE, OF ST. LOUIS, MISSOURI.

TREE-FELLING MACHINE.

1,039,338.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed October 2, 1911. Serial No. 652,437.

To all whom it may concern:

Be it known that I, JAMES WALLACE, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Tree-Felling Machines, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in tree felling machines, and the object of my invention is to construct a portable machine comprising a suitable carriage, a boom pivotally carried by the carriage and a saw-carrying frame suspended from the boom capable of movements in all directions whereby the saw may be moved forwardly and rearwardly relative to the carriage and tilted at any desired angle to adapt itself to the various requirements of a machine of this class.

With the above purposes in view my invention consists in certain novel features of construction and arrangement of parts as will be hereinafter more fully described, pointed out in the claims, and illustrated in the accompanying drawings; in which—

Figure 1 is an elevation of the complete machine, a portion only of the supporting carriage being shown; Fig. 2 is a plan of the complete machine, a portion only of the supporting carriage being shown, and a portion of the pivoted boom being broken away; Fig. 3 is an enlarged, detail, sectional plan taken on the line 3—3 of Fig. 1; Fig. 4 is a transverse, sectional elevation on an enlarged scale taken on the line 4—4 of Fig. 1; and Fig. 5 is a detail perspective illustrating one of the joints in the saw-carrying frame.

Referring by numerals to the accompanying drawings: 1 designates the frame, which is preferably rectangular and constructed of channel iron, of a wheeled carriage, and supported upon the frame 1 there is a beam 2 extending lengthwise of the carriage.

Pivotally supported upon the beam 2 adjacent the rear end of the carriage there is an upright 3 carrying at its upper end a stub shaft 4, and leading from the stub shaft downwardly and outwardly and connected to the frame 1 of the carriage are braces 5.

Secured to the upright is a boom 6 which is preferably constructed of a metallic I-beam, and leading from the outer end of the I-beam to the stub shaft 4 of the upright 3 is a stay brace 7.

8 designates a metallic channel beam constituting the main frame member of the saw and gear-carrying frame which is secured to rotate with the upright 3. At its outer free end the beam 8 carries a pair of spaced apart plates 9, as clearly shown in Fig. 5, in which there are coinciding perforations arranged to receive a bolt 11 from which the link 12 suspends. The link 12 is perforated adjacent to each of its ends, at its upper end to suspend from the bolt 11, and at its lower end to receive the bolt 13, which bolt supports the bifurcated and perforated end 14 of the innermost end member 15 of the saw frame proper.

Fixedly secured to the free end of the frame member 15 there is a support 16 for a worm 17, and connecting with said worm is a worm wheel 18 which is secured, by means of the bracket 19, to the arms which extend outwardly from the frame member 15. Carried by the said arms is a shaft 21 and embracing said shaft are the arms 22 extended from the outer member 23 of the saw frame proper.

By means of the shaft 21, through the medium of the arms 20 and 22, the outer saw-supporting member 23 is pivoted relative to the inner frame member 15 and through the worm and worm wheel connection there is a universal joint between the two frame members of the saw frame proper.

For the support of the saw frame proper, comprising the members 15 and 23, I have provided a yoke 24 which is pivoted to the frame member 15 and which yoke carries a threaded rod 25 which is hung from a wheeled truck 26 by means of a beveled wheel 27 which is internally threaded to receive the rod 25.

Coacting with the beveled wheel 27 there is bevel wheel 28 having attached thereto a crank 29 for the operation of the wheels 27 and 28 to vertically move and adjust the saw-carrying frame.

In order that the wheeled truck may be moved longitudinally of the beam 6, when the saw frame proper is moved longitudi-

nally relative to the beam. I have provided an arm 30, which is an extension of the link 12, and a rocking lever 31 which is pivoted to the boom and which is connected with the arm 30 by means of a link 32. The end of the rocking lever 31, opposed to the end connected to the arm 30 by means of the link 32, is connected with the wheeled truck 26 by means of a link 33 so that, when the frame 12 and arm 30 are moved by a movement of the saw frame proper lengthwise relative to the boom, the rocking lever 31, links 32 and 33 will move the wheeled truck 26 lengthwise relative to the boom.

Supported upon the carriage frame there is a shaft 34, extended transversely of the carriage frame, upon which there is supported a belt wheel 35 arranged to receive motion from a suitable motor carried by the frame, but which motor is not shown, and a bevel gear wheel 36.

Secured to the boom in suitable bearings is a shaft 37 which supports a double faced bevel gear wheel 38, one face of which meshes with the gear wheel 36 and the other face meshes with a gear wheel 39 carried by a shaft 40 supported in bearings carried by the member 8 of the saw-carrying frame. The shaft 40 at its outer end carries a bevel gear wheel 41.

Supported upon the bolt 11, which pivotally connects the frame member 8 with the link 12, is a bevel gear wheel 42 which meshes with the bevel gear wheel 41.

Carried in suitable bearings secured to the link 12 is a shaft 43 having at its one end a bevel gear wheel 44 meshing with the bevel gear wheel 42 and at its lower end a bevel gear wheel 45 which meshes with a bevel gear wheel 46 carried by the bolt 13 which pivotally connects the lower end of the link 12 with the member 15 of the saw frame proper.

Secured in suitable bearings, carried by the member 15 of the saw frame proper, is a shaft 47 carrying at its one end a bevel gear wheel 48 meshing with the bevel gear wheel 46, and at its other end a bevel gear wheel 49 which meshes with a bevel gear wheel 50 carried by the shaft 21 which forms a part of the pivotal connection between the members of the saw frame proper.

Carried in bearings secured to the member 23 of the saw frame is a shaft 51 which carries at its one end a bevel gear wheel 52 and at its other end a bevel gear wheel 54.

At the extremity of the saw frame member 23 there are suitable bearings, which support a shaft 55, having at its one end a bevel gear wheel 56 meshing with the gear wheel 55 and at its opposite end a circular saw 57.

In order to facilitate the manual handling of the universally connected members of the saw frame proper I have provided an arm 58 secured to the arm 22 of the frame mem-

ber 23, which arm 58 carries at its free end a weight 59 serving as a balance for the frame member 23.

In the practical operation of my machine, assuming the parts to be assembled as shown and the belt wheel 35 connected with an operating motor, motion is imparted to the circular saw 57 from the belt wheel 35 by the following means, which are in the order named; the bevel gear wheel 36 carried by the shaft 34 which supports the belt wheel 35, the bevel gear wheel 38, the bevel gear wheel 39, shaft 40, bevel gear wheel 41, bevel gear wheel 42, bevel gear wheels 44 and 45 carried by the shaft 43, the bevel gear wheel 46, bevel gear wheel 48, carried by the shaft 47, the bevel gear wheel 49, bevel gear wheel 50, bevel gear wheels 53 and 54 carried by the shaft 51, bevel gear wheel 56 and the shaft 55 which carries the saw. This train of gearing permits all of the movements of the saw 57 necessary to its work. The saw may be moved toward or from its supporting carriage and may be tilted in any desired angle, all of which movements may be accomplished by manual direction with the saw in operation.

I claim:

1. In a machine of the class described, a carriage, a boom pivotally supported upon the carriage, a frame member supported by the carriage for movement with said boom, a saw, a two-part frame for the saw, a universal joint between said two-part frame, a link pivotally connecting the two-part frame with the frame member movable with the boom, and means for imparting motion to said saw, which means permits tilting the saw in any desired angle or moving it toward or from said carriage, for the purposes stated.

2. In a machine of the class described, a portable carriage, a boom pivotally supported by the carriage, a frame member supported by the carriage and movable with said boom, a link suspended from said frame member, a two-part frame member pivotally carried by said link, a universal joint connecting said two-part frame, a saw carried by said two-part frame, means for suspending said two-part frame from said boom, which means are capable of lengthwise movements relative to the boom, and gear devices interconnecting the saw with gear devices on said carriage whereby motion is imparted to the saw from the gear devices on the carriage, and while in motion the saw is capable of being swung laterally relative the carriage toward or away from the carriage and tilted at various inclines.

3. In a machine of the class described, a saw-carrying frame comprising two members pivotally connected, gear devices carried by each of said frame members, a gear wheel meshing with each of said gear de-

vices and supported at the pivotal points
between said frame members, bearings be-
tween said frame members whereby they
may be rotated relative each other, and a
5 worm and gear wheel mechanism for rotat-
ing said frame members relative each other.
In testimony whereof, I have signed my

name to this specification, in presence of two
subscribing witnesses.

JAMES WALLACE.

Witnesses:

E. L. WALLACE,
N. G. BUTLER.