

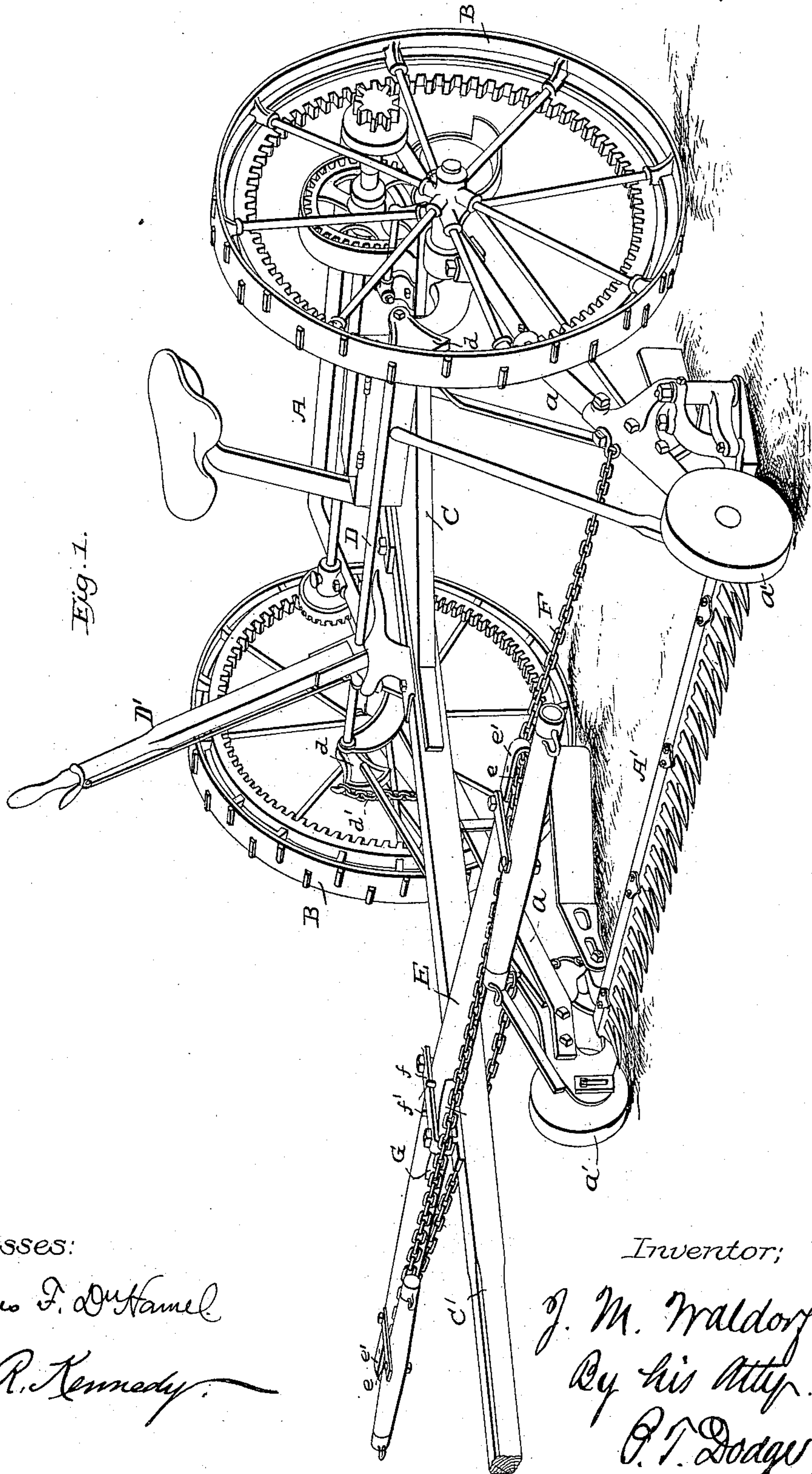
(No Model.)

2 Sheets—Sheet 1.

J. M. WALDORF.  
MOWING MACHINE.

No. 375,431.

Patented Dec. 27, 1887.



Witnesses:

James F. Duhamel.  
W. R. Kennedy.

Inventor:

J. M. Waldorf.  
By his Atty.  
O. T. Dodge.

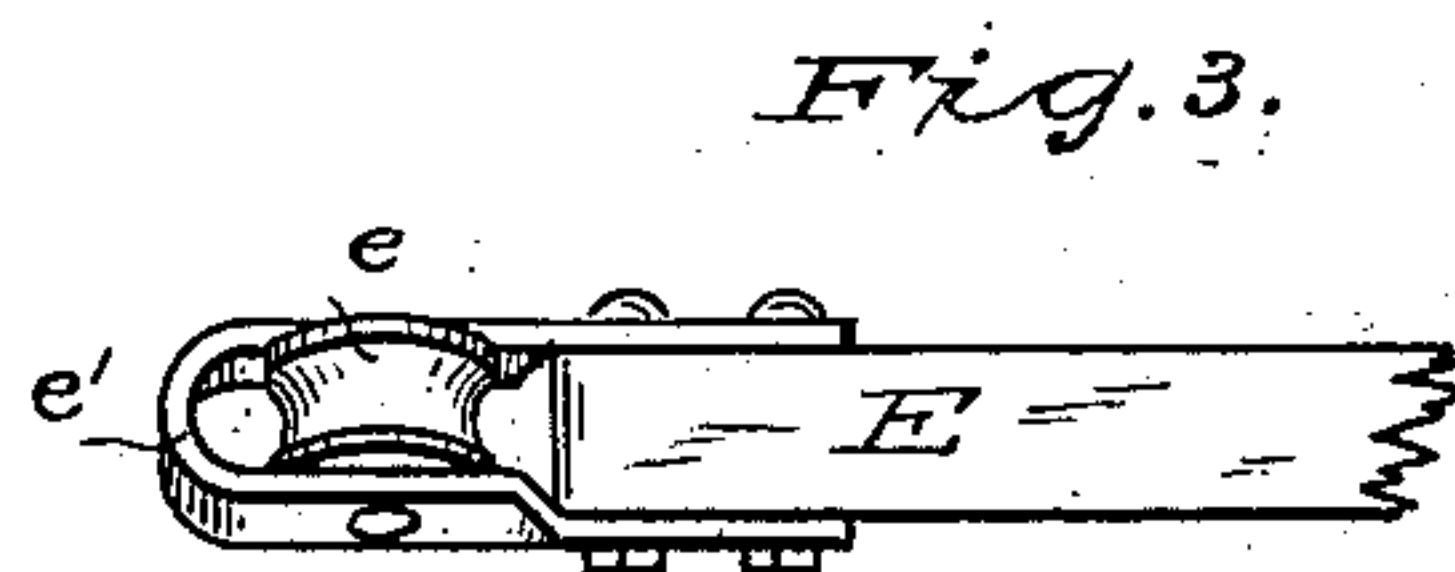
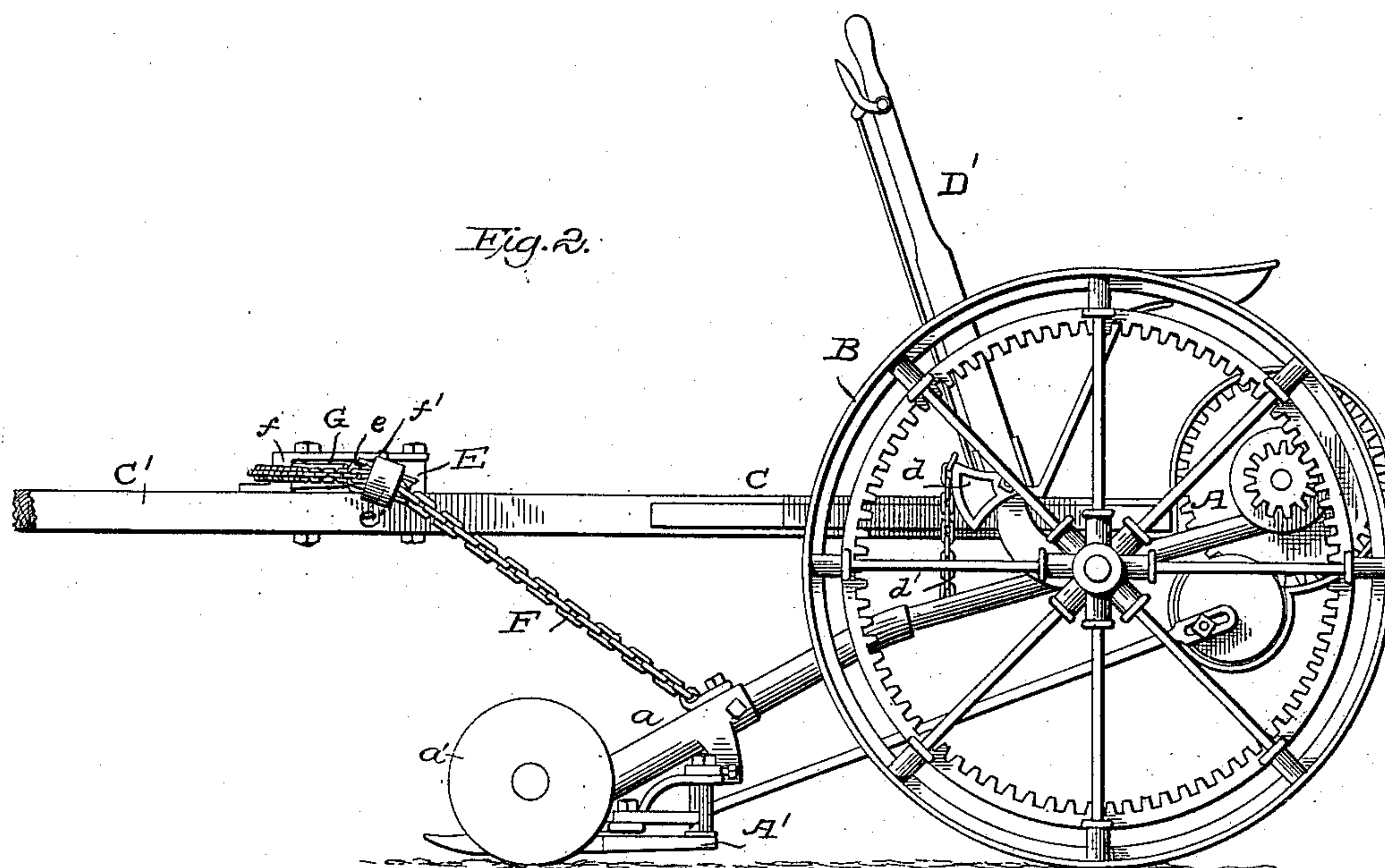
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J. M. Waldorf,  
By P. T. Dodge,  
Atty.



# UNITED STATES PATENT OFFICE.

J. MORRIS WALDORF, OF SOUTH BEND, INDIANA, ASSIGNOR TO THE MCCORMICK HARVESTING MACHINE COMPANY, OF CHICAGO, ILLINOIS.

## MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 375,431, dated December 27, 1887.

Application filed October 1, 1886. Serial No. 215,076. (No model.)

*To all whom it may concern:*

Be it known that I, J. MORRIS WALDORF, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain Improvements in Mowing-Machines, &c., of which the following is a specification.

In center-draft mowers as practically constructed the main frame, with its two thrust-bars, one adjacent to each wheel, carrying a finger-bar and cutter between them, swings about the axle, and the draft-tongue is connected to this axle, or to the frame itself adjacent to said axle. A rock-shaft has been carried in bearings upon the draft-frame near the axle, with lifting-segments at each end connected by short chains to each thrust-bar of the main frame, so that such frame could be lifted and the cutter-bar raised; but this was suited only to and intended for intermittent use for such purpose alone, and not for permanently maintaining the height of the cutter-bar or its distance from the draft-tongue. If left uncontrolled, the frame exhibits a tendency to down-thrust, which greatly increases the draft and the labor of the machine, and even affects the quality of the work. Therefore it is desirable to either limit the distance to which its front part can sink from the draft-frame or else to provide means whereby the down-thrust may be eased or lightened by the team. Owing to the great weight of the parts carried by said frame in advance of the rock-shaft and lifting-chains, flexible connections extending obliquely between the front part of each arm of the frame and the draft-tongue itself cannot be efficiently applied to determine the maximum distance between cutter-bar and tongue.

I propose as to the first part of my invention to apply pulleys to each end of the double-tree, which is of such length that these ends come nearly vertically above the thrust-bars of the frame at the respective sides, and to pass a chain from one of said thrust-bars through the pulleys above, alongside the double-tree, through the pulleys at the other end and down to the other thrust-bar, thus suspending the forward ends of these thrust-bars from a practically-overhead support, and causing one side of the frame to balance the other and

preventing the cutter-bar or the frame from sinking beyond a predetermined distance beneath the draft-tongue. Further, it is desirable that the forward end of the main frame, including the cutter-bar and the lead-wheels, should be lightened or eased, especially when traveling over rough ground, that it may run easily and not tend to dig or thrust down into the ground. Therefore, as to the second part of my invention, I mount the double-tree in such manner that it is permitted a limited play forward along the draft-tongue, but is confined thereto so as to have pivotal movement at any point in its play. Thus it will draw upon the chain, and, notwithstanding its vibrations, owing to the unequal pull, constantly tend to lift equally upon each thrust-bar of the main frame through said chain and to lift more with increasing unevenness of the ground.

While I shall describe the improvement in connection with a center-draft mower alone, it is not intended thereby to limit the scope of the claims to such a construction, since said improvement may be advantageously applied to various other machines where a main frame distinct from the draft-frame is provided having a tendency to a downward thrust, which it is desirable to correct.

In the drawings, Figure 1 is a perspective view of a center-draft mower embodying my improvements, and Fig. 2 is a side elevation thereof; Fig. 3 a detail showing the pulley and accessory parts at the end of the double-tree.

A represents the main frame of the mower supported from the axle and vibrating about the axis thereof, and in rear of said axle carrying the major part of the gearing.

a indicates lateral arms from this frame projecting in advance of the axle and supporting at their forward ends the finger-bar A', to which they are practically thrust-bars. To the shoes at each end of the finger-bar are adjustably secured stub-axes, upon which turn the lead-wheels a', whereby the finger-bar and sickle and front ends of the thrust-bars are expected to be sustained at a given distance from the ground and the friction lightened.

B represents the carrying-wheels, and C the draft-frame, pivoted either to the axle or to the main frame adjacent to the axle and termi-



nating in a pole or tongue, C'. A rock-shaft, D, is mounted in bearings upon this draft-frame and extends from side to side thereof, carrying at its ends lifting-segments *d*, connected by chains *d'* with the thrust-bars, and by means of a lever, D', this shaft may be oscillated in its bearings to lift the forward end of the main frame, and of course the finger-bar, when necessary to pass obstructions. The lever is sometimes furnished with a locking-dog, so that the frame can be secured when lifted; but as the rock-shaft has to be far back near the driver's seat the great leverage of the finger-bar and thrust-bars upon the lifting-segments make, this arrangement undesirable for mere adjustments or constant use.

It has already been intimated that owing to the inclined position of the main frame there is a marked tendency to down-thrust in the finger-bar, and this is especially so when the ground is uneven or hummocky, causing the lead-wheels to plunge into and through the turf and bring the finger-bar down into the earth, straining the machine, dulling the sickle, and throwing great labor upon the team. This, of course, can be prevented by careful attention on the part of the driver, but at the expense of much hard work and inattention to his team, and I propose, therefore, to provide the doubletree E at its ends with pulleys *e*, which will come above or nearly above the forward ends of the thrust-bars, and may be carried in yokes *e'* at the outer ends of the tree, as shown, or in brackets secured to the tree at its upper or rear side, as preferred. Then from the front end of the thrust-bar on one side I lead a rope or chain, F, up over the pulley at the corresponding end of the doubletree, thence along the doubletree to the other end and over the pulley at that end, then down to the front end of the other thrust-bar, to which it is secured after being drawn taut, so as to just permit the thrust-bars and finger-bar to fall to the maximum permissible distance from the draft-tongue when the machine is in use. This arrangement permits the doubletree to have free play upon the tongue without increasing or decreasing the tension of the rope or chain or permitting the finger-bar to sink beyond the original limit determined by the length of the chain. The finger-bar will therefore retain a fixed maximum distance from the tongue during operation, irrespective of any variation of power required to advance the machine, owing to unevenness of the ground or other causes, while free to rise from such point should the lead-wheels ride up a swell or hillock in the ground.

In order that the draft of the machine may act positively and directly upon the forward end of the frame to lift it as the power required to advance the machine is increased, and also that this draft may be equalized between the horses, it is necessary that the doubletree should have a capacity of shifting its pivot back and forth. I therefore provide

the tongue with a bridge-strap, *f*, between which and the tongue the doubletree is held. This strap is longer than the distance from the front to the rear edges of the doubletree and permits it a limited movement longitudinally of the tongue, while pins *f'*, secured in the tree on each side of the strap, prevent it from endwise movement or escape, leaving it free, however, to have a pivotal play concurrently with its lateral movement longitudinal of the draft-tongue, it being understood of course that where this provision is meant for the movement of the doubletree in the direction of the draft the usual bolt connecting the doubletree with the tongue will be dispensed with. Under this arrangement the rope or chain should be taut when the doubletree occupies its rearmost position on the bridge-strap and the team is hitched to the machine, in order that the finger-bar may be just raised from the ground, and that it may be lifted slightly as the draft increases, so that upon uneven ground it may be carried higher than at other times.

Under some circumstances it may be found necessary to modify the degree of force required to lift the finger-bar, as just described, and for this purpose I interpose a suitable spring, G, between the forward end of the bridge-strap and the doubletree, so that the forward movement of the team upon level ground will simply cause the rope or chain to be put under tension that will draw the machine through the spring and draft-frame mainly, instead of through the chain-connection with the front end of the main frame; but upon meeting an obstruction the power required to move the machine forward will be increased, thus compressing the spring and throwing the larger part of the draft upon the thrust-bars and slightly raising the finger-bar.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of the carrying-wheels, the axle, the main frame vibrating about said axle and having thrust-bars extended in advance thereof, the draft-frame, the doubletree supported upon said draft-frame and having pulleys at its ends, and the rope or chain extending from the forward end of one thrust-bar up over the pulley at that end of the tree, thence alongside the tree, over the pulley at the other end, and down to a connection with the front end of the thrust-bar beneath.

2. The combination, substantially as hereinbefore set forth, with the draft-frame and vibrating main frame having thrust-bars, of the doubletree provided at its ends with pulleys, the bridge-strap confining the tree to the tongue, with capacity of limited play lengthwise thereof, means to prevent endwise movement of said tree, and a rope or chain passing from the front end of one thrust-bar over the pulley at that end of the tree, thence alongside said tree, over the pulley at the other end, and down to a connection with the front end of the underlying thrust-bar.

3. The combination, substantially as here-



inbefore set forth, with the draft-frame and vibrating main frame having thrust-bars, of the doubletree provided at its ends with pulleys, the bridge-strap confining the tree to the tongue, with capacity of limited play lengthwise thereof, means to prevent endwise movement of said tree, a rope or chain passing from the front end of one thrust-bar over the pulley at that end of the tree, thence alongside said tree, over the pulley at the other end, and down to a connection with the front end of the underlying thrust-bar, and a spring arranged to resist the forward movement of the doubletree.

4. The combination, substantially as here-inbefore set forth, of the carrying-wheels, the main axle, the main frame pivoted about said axle, its thrust-bars, the draft-frame, the finger-bar borne at the front end of said thrust-bars, the lead-wheels, the doubletree having guides or pulleys at its ends and permitted a limited play longitudinally of the tongue, and

the chain passing over said pulleys and secured at its ends to the front ends of the thrust-bars.

5. The combination, substantially as here-inbefore set forth, of the thrust-bar *a*, the finger-bar *A'*, the draft-frame *C*, the bridge-strap *f* on the tongue, the doubletree having pulleys at its ends, the pins *f'*, confining the tree against endwise movement, the spring *G*, and the chain passing from the front end of one thrust-bar up over the pulley on the adjacent end of the tree, thence over the pulley at the other end, and down to a connection with the front end of the second thrust-bar.

In testimony whereof I hereunto set my hand, this 17th day of September, 1886, in the presence of two attesting witnesses.

J. MORRIS WALDORF.

Witnesses:

HENRY B. HINE,

JAMES G. THEROCKMORTON.