

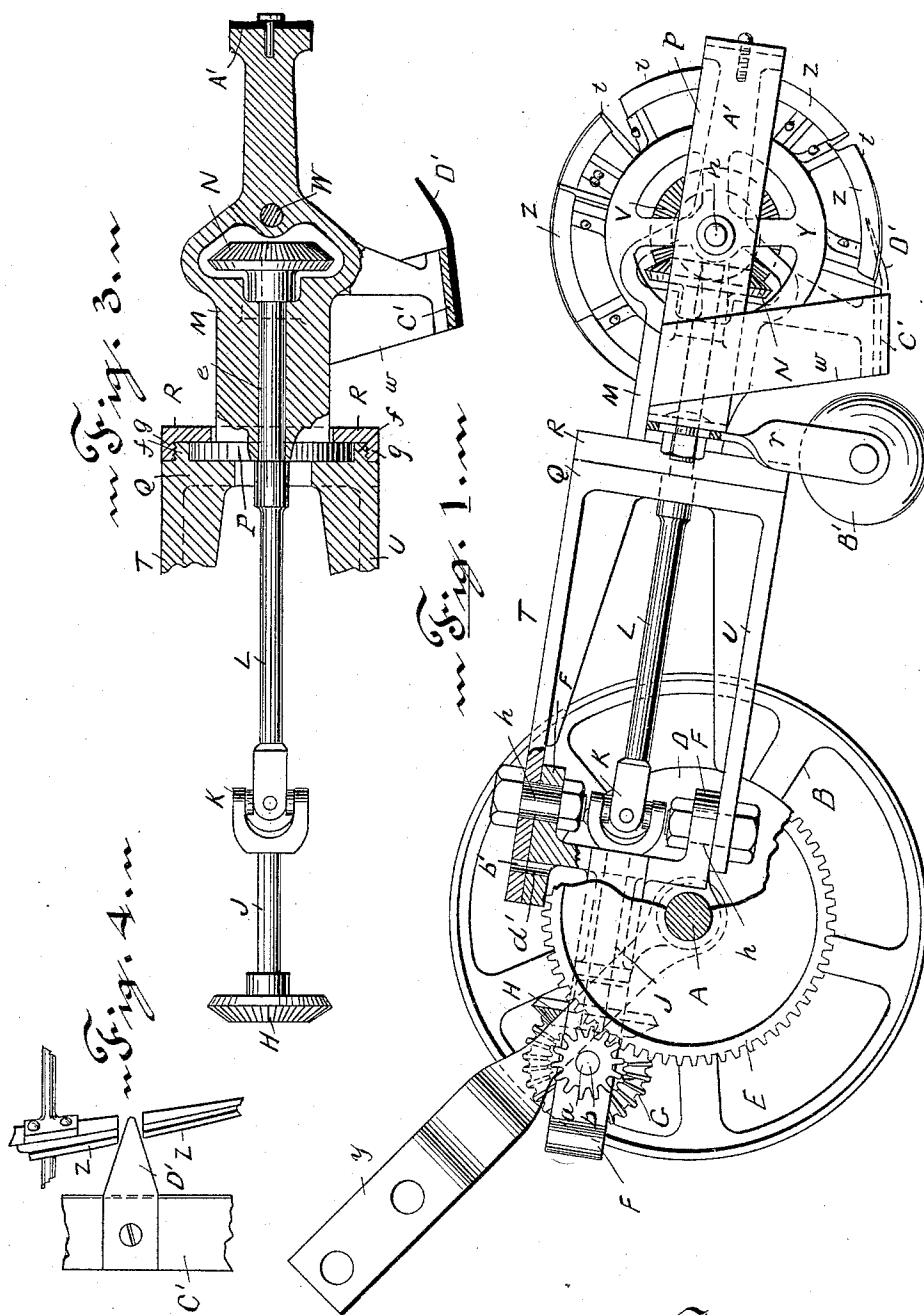
(No Model.)

2 Sheets—Sheet 1.

N. LOMBARD.
LAWN MOWER.

No. 473,845.

Patented Apr. 26, 1892.



Witnesses,
Percy Bryant,
Carrie E. Nichols.

—Inventor, —
Nathaniel Lombard.
per Edwin W. Brown.
Attorney.

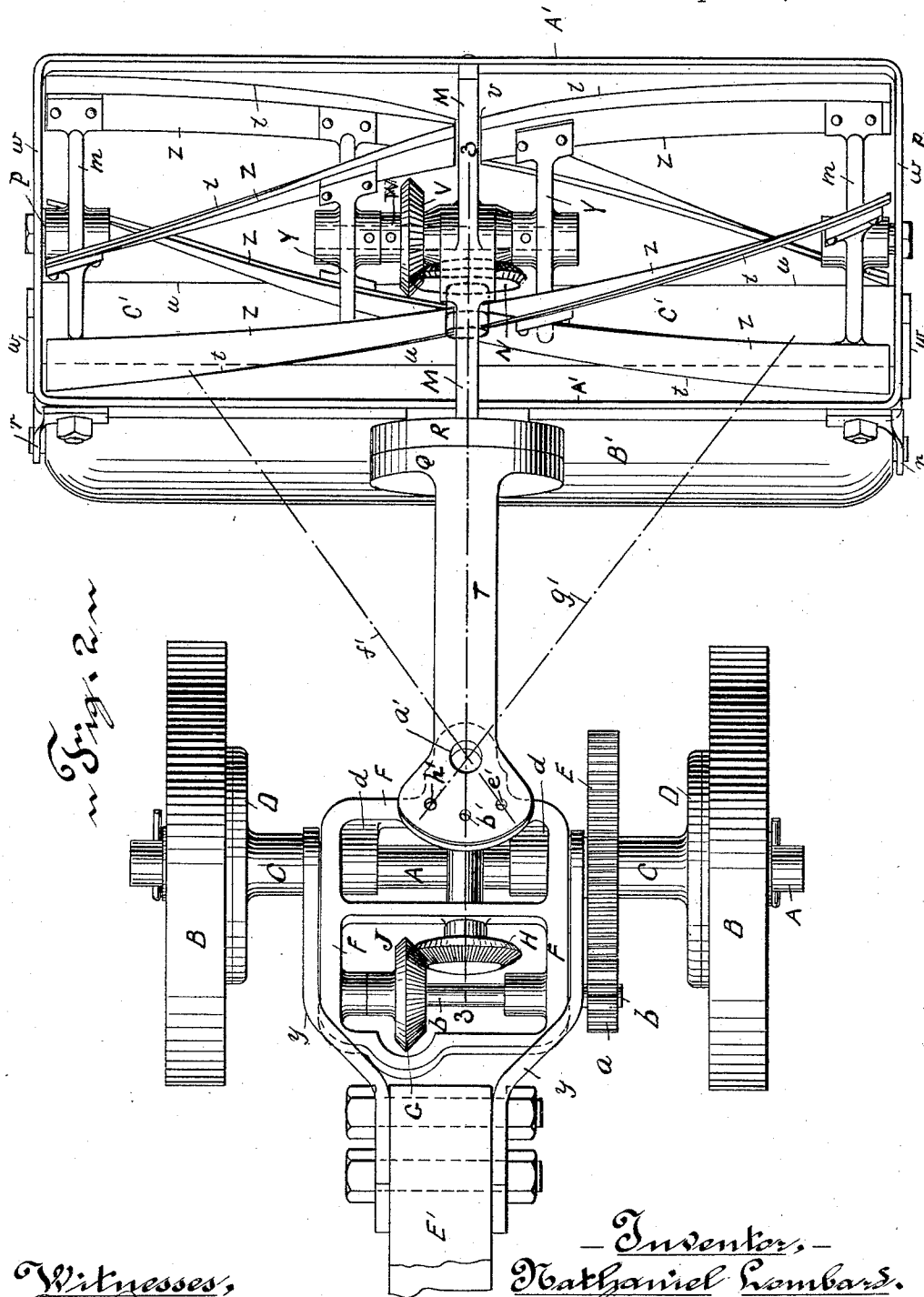
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UNITED STATES PATENT OFFICE.

NATHANIEL LOMBARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HENRY A. CLARK, OF SAME PLACE.

LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 473,845, dated April 26, 1892.

Application filed October 22, 1891. Serial No. 409,501. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL LOMBARD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Lawn-Mowers, of which the following is a full, clear, and exact description.

This invention has for its object a lawn-mower that can cut the grass close to and round about trees, posts, fences, and close to the house, the edges next to paths, and all such places where heretofore it has been impossible to cut the grass with a lawn-mower, but which usually has been done by hand with a sickle or shears, &c.; and this invention consists of a lawn-mower constructed and arranged for operation all substantially as hereinafter fully described, reference being had to the accompanying sheets of drawings, in which—

Figure 1 is a side view of a lawn-mower constructed in accordance with this invention; Fig. 2, a plan view. Fig. 3 is a detail vertical longitudinal section on line 3 3, Fig. 2. Fig. 4 is a detail plan view, to be hereinafter referred to.

In the drawings, A represents an axletree having two carriage or driving wheels B B, which freely turn thereon. Secured to the axletree at each side by its hub C is a disk or plate D, each of which is adapted to be connected to its respective wheel by a clutch arrangement that when the wheels are turned in one direction will engage with the disks or plates and cause the axletree to turn, and when the wheels are turned in the other direction will be disengaged from the disks or plates and turn freely on the axletree without turning it, as is common and well-known in lawn-mowers and needs no particular description herein. Secured to the hub of one of these disks is a gear E, which engages with a small gear *a* on a shaft *b*, adapted to turn in bearings of a frame F, which is supported at each side at *d* on the axletree, which passes freely through the same, the shaft *b* having a miter-gear G secured thereto, which miter-gear engages with a miter-gear H of a shaft J at right angles to the shaft *b*, turning in a bearing in the frame F. The shaft J extends beyond the frame F, and at its other end is connected by a universal joint K to a shaft

or rod L, which extends through and is arranged to turn in a bearing *e* of an arm or frame M and has on its outer end a miter-gear N. This arm or frame M has a plate P on its end at right angles thereto, having circular ends, and which fits between two plates Q R within a ring *f* of said plate Q, which ring has a thread on its periphery and is arranged to screw into the flange *g* of the other plate R, which secures the plate of the frame-arm M between the two plates Q R, but allows of its turning between the plates freely and within the ring *f*, by which the frame or arm M can freely turn or swivel vertically, for the purpose hereinafter recited.

The ring-plate Q has secured to it or forming a part thereof two arms T U, one above the other, connected by pivots *h* to the axletree-frame F, so that the arms and plates attached thereto and their frame M can swing back and forth in a horizontal direction to the right or left on said pivots.

The miter-gear N engages with another miter-gear V, secured to a shaft W, adapted to turn in a bearing in the arm M, which shaft W has secured on each end a circular plate or wheel Y, to which on their peripheries are secured the inner or adjacent ends of the cutters Z, which by their outer ends are secured to other and similar circular plates or wheels *m*, each of which is adapted to turn on a short shaft *n*, secured to the end cross-bar *p* of a rectangular frame A', which is secured to the arm M and its plate P. Extending down from each end bar *p* of this rectangular frame are arms *r*, having bearings for roller B' to turn therein, which in operation of the mower rests and runs on the ground and gages the cutters in their operation on the grass, as usual.

As the driving-wheels are turned in running them over the ground in the right direction they cause the gears in the axletree-frame F, and thus the shaft J, and by its universal joint the gear N, to turn, which, through the gear V, turns the plates Y, to which the cutters are attached, causing them to revolve, which in their revolution cut the grass between their cutting-edges *t* and the cutting-edge *u* of a horizontal bar C', attached to arms *w* of the rectangular or cutter frame A' below the same.

When desirous of cutting the grass to the

right of the line of travel of the driving-wheels, the cutter-frame A' is swung to the right on its pivots *h*, and to cut to the left the frame is swung to the left, which cuts the grass correspondingly to the right and left of the wheels, the two extreme positions being indicated in dotted lines *f'* and *g'* in Fig. 2.

The cutters, being forward of the wheels, enables the wheels to be put closer together than is usual in lawn-mowers, so that the cutters when straight ahead of the wheels project laterally each way beyond the wheels, as is shown in plan view in Fig. 2. This arrangement of gear connection between the shafts of the cutters and axletree necessitates the cutters being in two lengths, being divided at the center for them to pass by the arm M, and to insure that the grass below such opening or space between the cutters shall be cut a V-shaped flat piece D' is secured to the bar C', which projects forward therefrom and is under the opening or space *v* between the cutters, as shown more particularly in detail in Fig. 4, so that the grass at such place as the machine is moved along will be pressed to the right and left by this V piece into position to be cut by the cutters.

The connecting of the cutter-frame A' to the axletree-frame F by a swiveling joint, as shown, enables the cutter-frame to be swung vertically to any angle, so that it can accommodate itself to any incline of the ground it may pass over in operation and cut the grass properly thereon, so that the grass on all irregular surfaces of the ground can be cut, as well as on level surfaces and without any especial attention of the operator.

A handle E' is connected by its arms *y* to the axletree by which the mower is pushed over the ground in the usual manner.

The universal joint can be dispensed with when it is not desirous to have the cutters move to the right or left in relation to the wheels, and in such case the rod L can be made rigid, also the swiveling connection can be dispensed with, but it is preferable to use both the universal joint and swiveling connection, as the machine is much more effectual.

When the cutter-frame is swung to the right or left as the machine is pushed forward in operation, the angle of inclination horizontally to the line of the wheels causes the mower to naturally run in a circular direction without any effort of the operator, which many times is very desirable.

In Fig. 2 the bolt or pin *h*, making the upper pivot on which the cutter-frame swings, is not shown, it being removed, showing the opening or bearing *a'* for it, and in Fig. 1 is shown in section a hole *b'* in the arm T and one *d'* in the wheel-frame, into which when coincident with each other a pin can be inserted which will hold the cutter-frame in rigid connection with the wheel-frame, which is the position shown in plan in Fig. 2. The arm T also has openings *e' h'* at the right and

left of the opening *b'*, concentric with the pivot *h*, into either of which and the opening *d'* the pin can be inserted when the cutter-frame is swung to the right or left, respectively, into one of the positions shown by the dotted lines *f' g'*, representing, respectively, the central longitudinal line of the cutter-frame when moved to the right or left on such angles, which will hold the cutter-frame rigidly in such position.

Having thus described my invention, what I claim is—

1. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable frame, to which shaft said cutters are secured, gearing connected to said cutter-shaft, and a vertical swivel-joint connecting said cutter-shaft frame and driving-wheel frame.

2. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable frame, to which shaft said cutters are secured, gearing connected to said cutter-shaft, a vertical swivel-joint connecting said cutter-shaft frame and driving-wheel frame, a rod connected to said cutter-shaft frame, and a universal joint connecting said rod with said driving-wheel frame.

3. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable support, to which shaft said cutters are secured, a plate connected to said cutter-shaft, a plate connected to said driving-wheel frame, and a recess in said plate, in which is disposed and adapted to turn said cutter-shaft plate and secured from detachment therefrom.

4. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable support, to which shaft said cutters are secured, a plate connected to said cutter-shaft, a plate connected to said driving-wheel frame, having a screw-thread thereon, a recess in said plate, in which is disposed and adapted to turn said cutter-shaft plate, and a cap-plate of said cutter-shaft support, having a screw-thread to screw onto said driving-wheel gearing-plate.

5. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable frame, to which shaft said cutters are secured, gearing connected to said cutter-shaft, and a vertical swivel-joint connecting said cutter-shaft frame and the driving-wheel frame.

6. In a lawn-mower, in combination, a shaft,
driving-wheels on said shaft, a support, gear-
ing carried by said support, adapted to engage
with one of said wheels, an opening *d'* in said
5 support, a series of cutters, a shaft to which
said cutters are secured and adapted to re-
volve in a suitable frame, said frame pivoted
to said wheel-gearing support and having a
series of openings concentric with said pivot,
10 and a pin to engage with said opening *d'* in said

wheel-gearing support and one of said series
of openings.

In testimony whereof I have hereunto set
my hand in the presence of two subscribing
witnesses.

NATHANIEL LOMBARD.

Witnesses:

EDWIN W. BROWN,
CARRIE E. NICHOLS.