(No Model.) 2 Sheets—Sheet 1.

C. NEWHALL.

LAWN MOWER.

No. 259,904. Patented June 20, 1882.

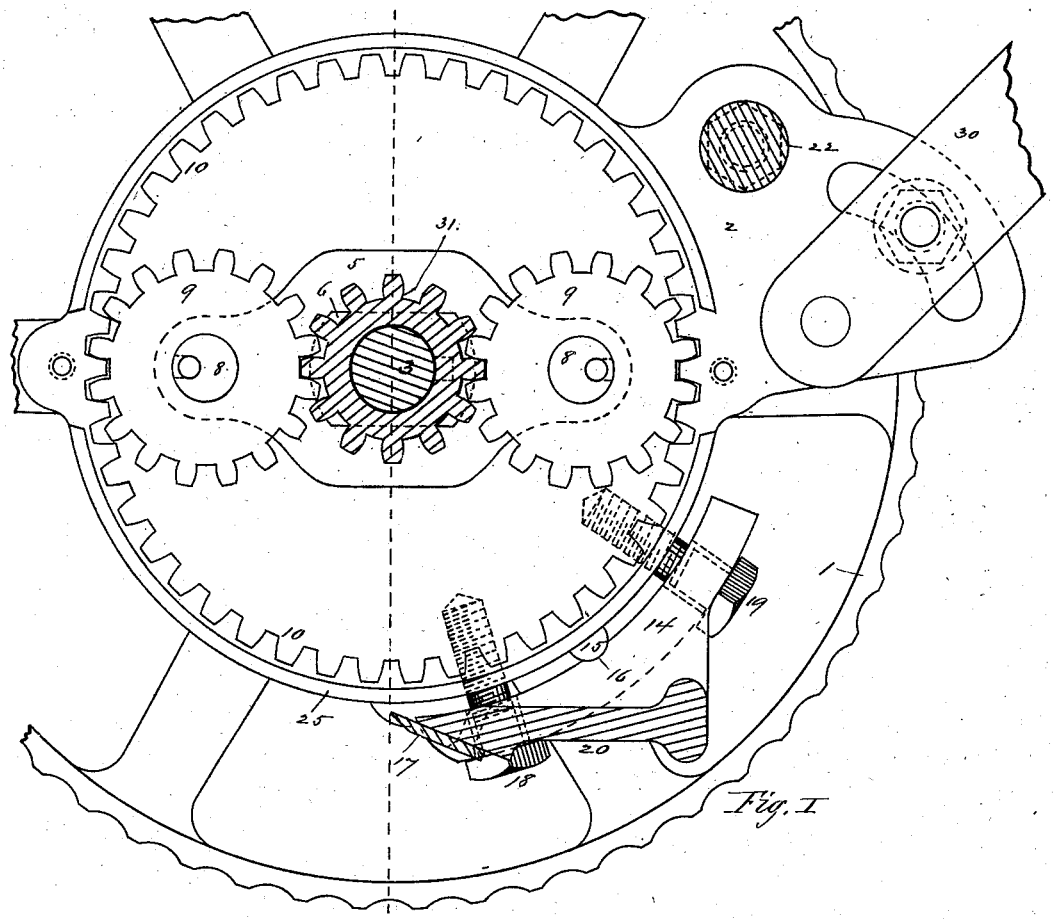

Fig. I

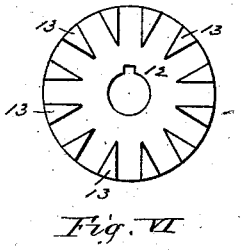

Fig. VI

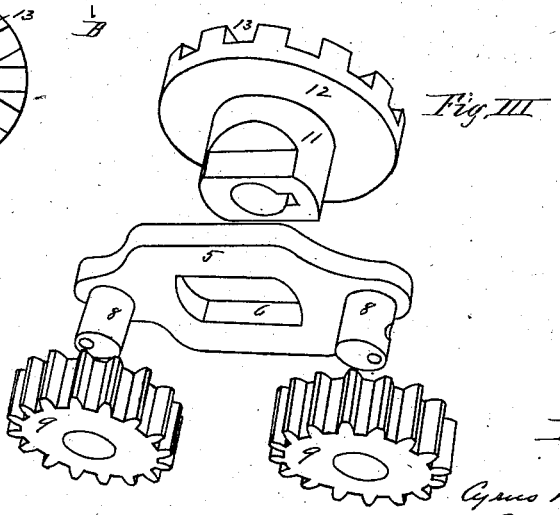

Fig. III

Witnesses.
Chas. H. Wood
N. E. Durnell

Inventor.
Cyrus Newhall,
By T. Alexander,
his Atty.

(No Model.) 2 Sheets—Sheet 2.

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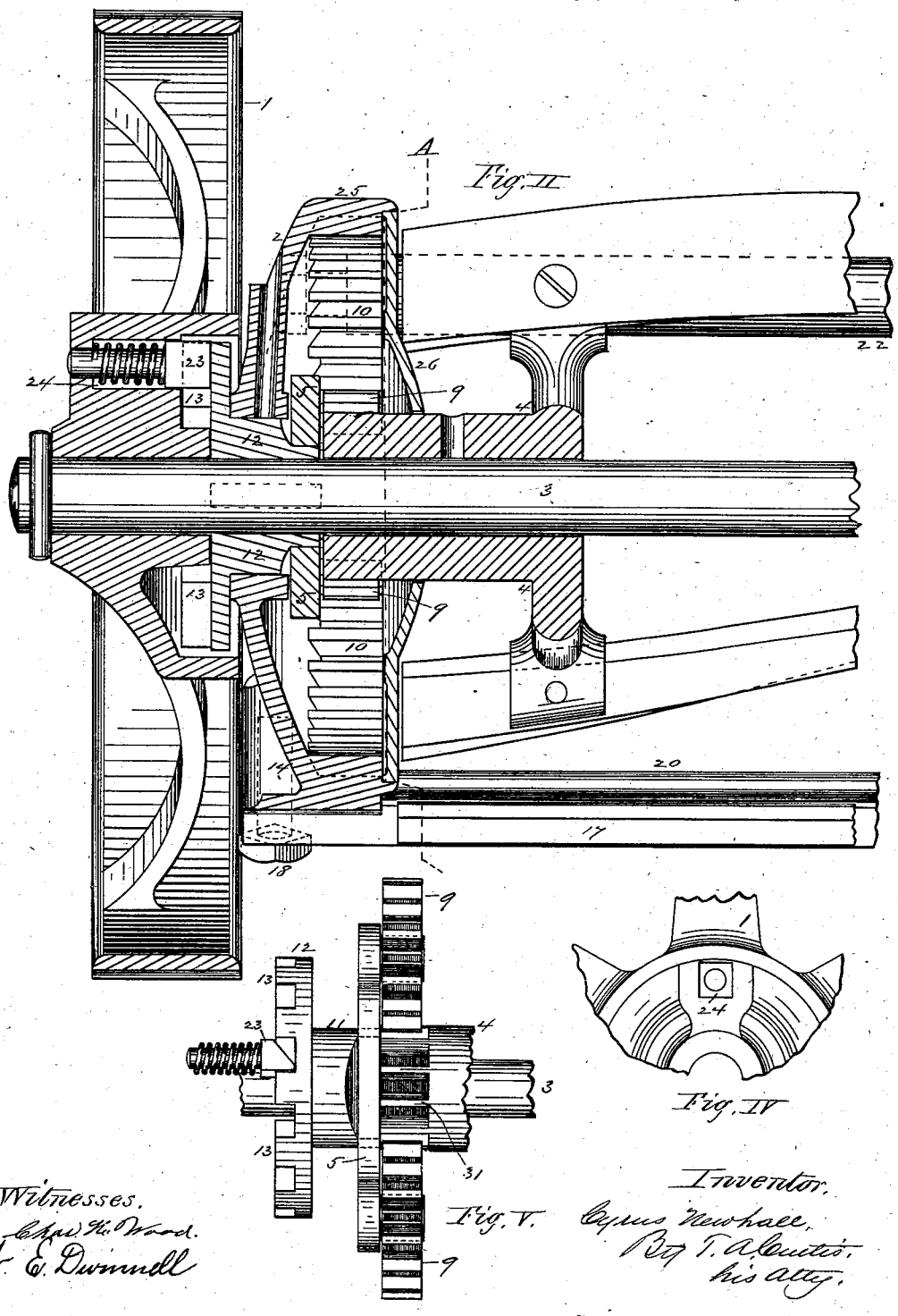

Fig. V.

Fig. IV

Witnesses.
Chas. H. Wood.
V. E. Dunnell

Inventor.
Cyrus Newhall.
By T. A. Curtis.
his Atty.

UNITED STATES PATENT OFFICE.

CYRUS NEWHALL, OF HINSDALE, NEW HAMPSHIRE.

LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 259,904, dated June 20, 1882.

Application filed April 1, 1882. (No model.)

To all whom it may concern:

Be it known that I, CYRUS NEWHALL, of Hinsdale, in the county of Cheshire and State of New Hampshire, have invented a new and useful Improvement in Lawn-Mowing Machines, of which the following is a specification and description.

The object of my invention is to provide a simple, durable, and effective means for driving the revolving cutters in a lawn-mowing machine, and I accomplish this by the mechanism substantially as hereinafter described, and illustrated in the accompanying drawings, in which—

Figure I is a transverse section of the machine at line A of Fig. II, showing the mechanism for driving the revolving cutters. Fig. II is a vertical longitudinal section of a portion of the machine at one end. Fig. III is a perspective view of the clutch which is keyed to the shaft or axle, the saddle-piece secured to the clutch, and the toothed idlers which revolve on the journals of the saddle which communicates motion from the internal gear to the toothed wheel on the revolving reel. Fig. IV is an end view of the socket in which the ratchet dog or pawl is placed. Fig. V is a plan view of the clutch, the saddle-piece secured thereto, with its idler-gears in place, and the gear on the revolving cutters; and Fig. VI is a front view of the toothed face of the clutch.

In the drawings, 1 represents the driving-wheel, of which there are two, secured one at each end of a shaft or axle, as 3, and the inside of the hub of each wheel, as 1, is made to receive a clutch, as 12, which is keyed fast to the axle, and whose outer face is provided with a series of radial projections, as 13, with a projecting hub, as 11, on the opposite side, whose extreme end is preferably flattened or otherwise prepared to receive the saddle-piece, as 5, this flattened end of the hub of the clutch fitting into the elongated hole, as 6, in the saddle-piece, by which the two are secured firmly together; and this saddle-piece is provided with a projecting spindle, as 8, at each end, upon which is adapted to revolve a toothed wheel, as 9.

A plate, as 2, to which the handle, as 30, is secured, is hung upon the clutch, as 12, at each end of the machine, and at one end of the machine this plate is enlarged, and is provided with an inwardly-projecting flange, as 25, upon the inside of which is cast an internal gear, as 10, and this gear is required only at one end of the machine, as will be further explained hereinafter. These plates, as 2, one at each end of the machine, are suitably connected and secured by rods, as 22, forming a frame, and each plate is provided with a small projection or protuberance, as 15; and one end of the fixed knife-bar, as 20, is secured to one of the said plates, and the other end to the other plate, by adjusting-screws, as 18 and 19, with the protuberance, as 15, bearing against the knife-bar, as at 16, so that by turning the screws properly the knife-bar will rock on said protuberance and be secured with the fixed knife, as 17, secured to said knife-bar at any desired elevation.

A dog, as 23, having a prismatic head, beveled at the extreme inner end on one side, is placed in a hole, as 24, in the wheel, as 1, from the inside, with the open end of the hole of a form corresponding to the prismatic end of the dog to hold the latter in its proper position, with a spring inside to keep the dog always in engagement with the teeth of the clutch. A bonnet or plate, as 26, is fitted to this flange 25 on the inside and covers the mechanism inside, and the hub, as 4, of the end frame, to which the revolving knife-blades are secured, (which frames revolve loosely on the shaft 3,) projects through this plate or bonnet, with a small toothed wheel, as 31, made upon or secured to the extreme end of said hub, which toothed wheel engages with both toothed idler-wheels 9, revolving on the spindles 8 of the saddle-piece 5, these idler-wheels 9 also engaging with the internal gear, 10, cast on the inside of the flange 25 of the fixed frame 2. I prefer to make or cast this toothed wheel, as 31, integral with the hub 4 of the cutter or knife frame, as it will be equally as operative and will be more easily and cheaply made.

The dog, as 23, which is fast in the wheel, is held by its spring in constant engagement with the teeth of the clutch, and when the wheels 1 are revolved in a forward direction the dog carries around with it the clutch, and also the saddle-piece 5, secured to the clutch, and as the toothed idler-wheels 9 engage with the internal gear, 10, inside the flange 25, and also engage with the small toothed wheel, as

31, between them on the hub of the knife-frame supporting the revolving cutter or knife, the internal gear, 10, being connected with the plate or frame 2, and consequently remaining stationary, the knife-frame and revolving cutters are revolved at a speed as much greater than the speed of the revolving driving-wheels 1 as the diameter of the internal gear, 10, is greater than the diameter of the small toothed wheel, as 31, on the hub of the frame of the revolving cutters.

It will be seen that the axle 3 revolves with and at the same speed as the driving-wheels 1, because the wheel and dog carry the clutch and axle, which are keyed fast together; and as the axle revolves in the same direction as the knife revolves, the latter revolving faster than the axle, it is evident that much of the friction of the knife revolving upon the axle is removed, which is a very important feature of the invention.

I construct the machine, in practice, with a dog, as 23, in each driving-wheel 1, to engage with a clutch, as 12, at each end of the machine upon which the frame, as 2, has its bearing, the clutches revolving in the frame; but I use the saddle-piece, as 5, and the internal gear, 10, and the toothed wheels, as 9 and 31, only at one end of the machine, as the knife will be revolved quite well with the gear part of the driving mechanism at only one end of the machine.

It is evident that the machine would be operative with only one toothed idler-wheel revolving on its spindle on the saddle-piece; but I prefer to use two, in order that this part of the mechanism may be more evenly balanced and work more smoothly.

If the small toothed wheels, as 31, are made or cast integral with the hub, as 4, of the end frame to which the revolving knife blades are attached, both said end frames may be made alike, and the hub of that at the other end of the axle from that which is in use with the driving-gear may extend along the axle in the same direction, so that should the small toothed wheel on the hub which is in use with the driving-gear become injured the two end knife-frames may be detached from the knife-blades and be interchanged, if desired.

It will be seen that this driving mechanism is effective and durable, and the revolving cutters may be driven at any desired velocity by increasing or diminishing the diameter of the stationary internal gear, as 10, with relation to the diameter of the small toothed wheel, as 31.

It is evident that any desired form of dog may be secured in the driving-wheel to engage with and actuate the clutch, and that said dogs and clutches may be interchangeable, or either pair fit or be adapted to either end of the machine.

If desired, the relative position of the clutch and the actuating-dog may be reversed—that is to say, the radial teeth of the clutch might be cast on the inner face of the wheel, and the actuating-dog might be socketed in an enlarged place on the axle; but the resulting movement of the knife, axle, and driving-wheels would be precisely the same as when arranged as hereinbefore described.

Having thus described my invention, what I claim as new is—

1. In an improved lawn-mowing machine, the combination of an axle supported by two driving-wheels, each provided with an actuating-dog, a clutch fixed to said axle inside of each driving-wheel and engaging with said dog, a stationary frame supported upon said clutch or axle at each end of the machine and provided with an internal gear, a saddle-piece secured to said clutch and provided with one or more toothed idler-wheels adapted to revolve thereon and engage with said internal gear, and a toothed wheel on the revolving knife-frame, adapted to engage with said idler-wheels, whereby said revolving knife is rotated by the movement of the driving-wheels, substantially as described.

2. An improved lawn-mowing machine consisting of the combination of a main supporting axle or shaft, two driving-wheels secured thereon, a knife-frame supported by and adapted to revolve upon said main axle, and suitable mechanism for revolving said axle and said knife-frame both in the same direction and at different rates of speed, substantially as described.

CYRUS NEWHALL.

Witnesses:
HENRY E. HUNTER,
HENRY R. VAILLE, Jr.