

(No Model.)

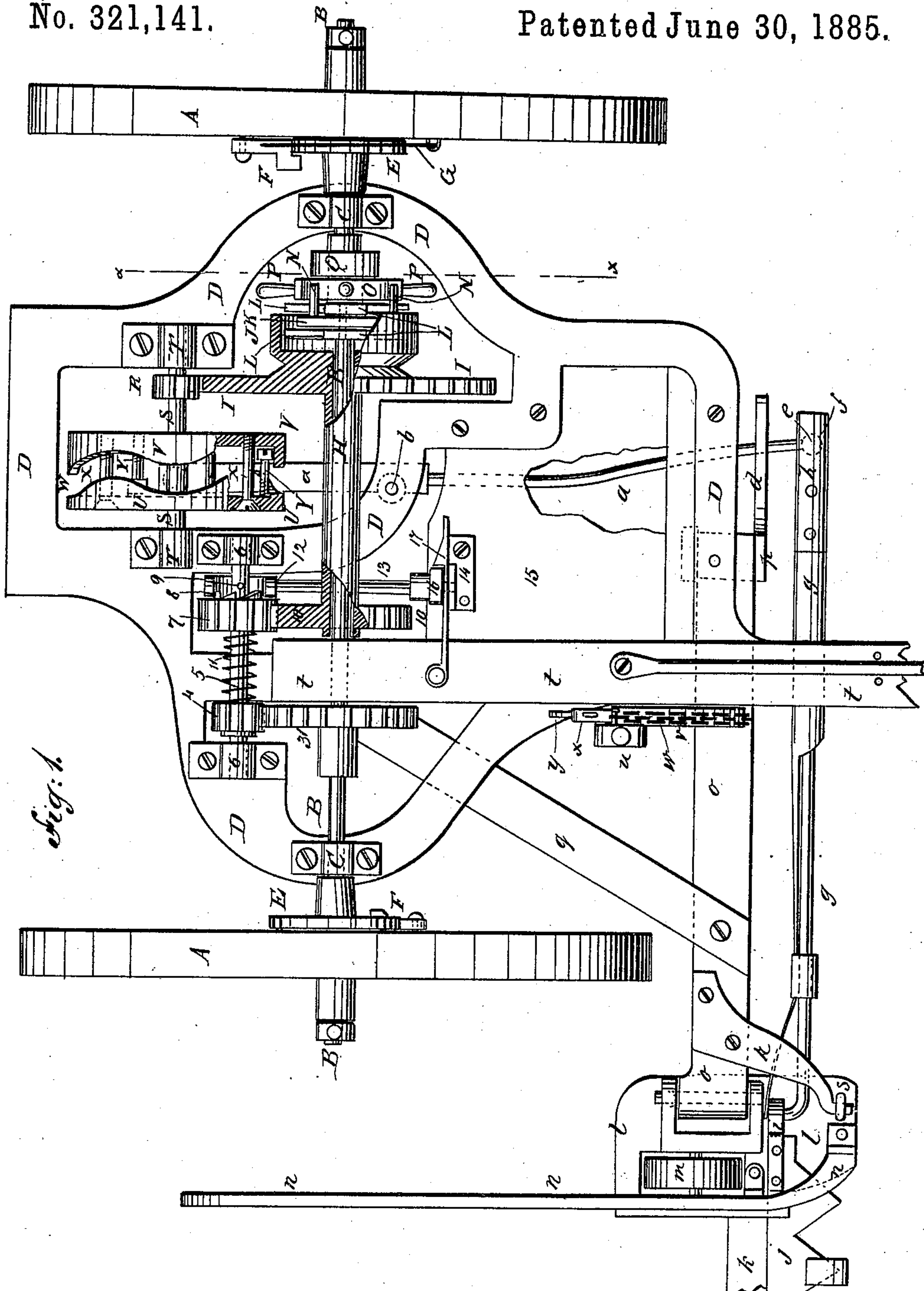
2 Sheets—Sheet 1.

B. SAUNDERS.

MOWER.

No. 321,141.

Patented June 30, 1885.



WITNESSES:

Chas. Nide
C. Sedgwick

INVENTOR:

B. Saunders

BY

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ATTORNEYS.

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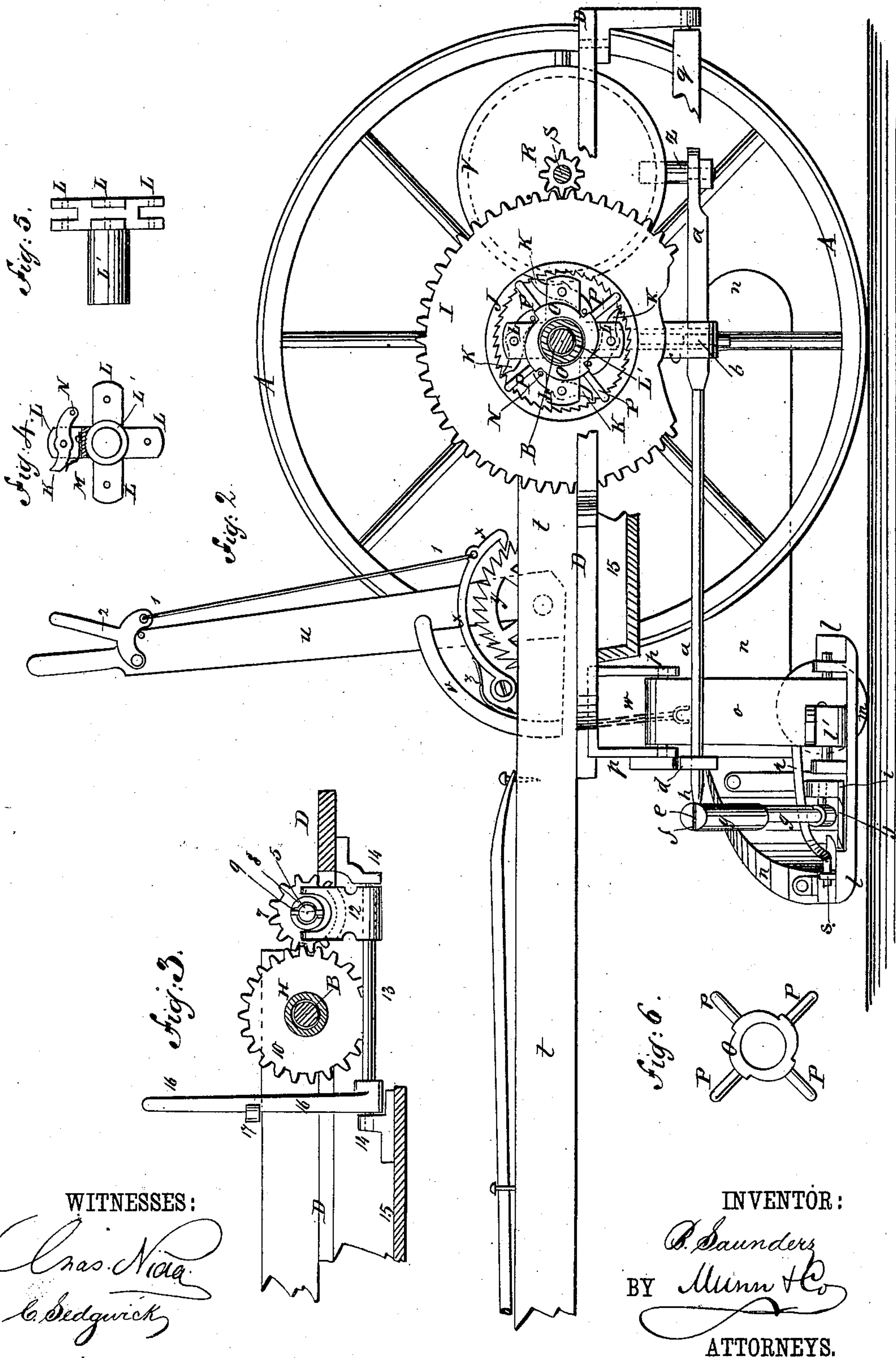
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UNITED STATES PATENT OFFICE.

BENJAMIN SAUNDERS, OF CLAVERACK, NEW YORK.

MOWER.

SPECIFICATION forming part of Letters Patent No. 321,141, dated June 30, 1885.

Application filed June 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN SAUNDERS, of Claverack, in the county of Columbia and State of New York, have invented certain new and useful Improvements in Mowers, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1, Sheet 1, is a plan view of my improvement, partly in section, and parts being broken away. Fig. 2, Sheet 2, is a side elevation of the same, partly in section, through the line *x x*, Fig. 1. Fig. 3, Sheet 2, is a sectional side elevation of a part of the driving mechanism. Fig. 4, Sheet 2, is a side elevation of the armed hub, part of one arm being broken away, and showing one of the pawls. Fig. 5, Sheet 2, is a rear elevation of the same. Fig. 6, Sheet 2, is a side elevation of the shifting-ring.

The object of this invention is to provide mowers constructed in such a manner that the sickle-bar can be made to vibrate faster or slower, as the character of the grass to be cut may require, without stopping the machine.

The invention consists in a mower constructed with the axle and main gear-wheel connected by a ratchet-wheel, spring-pressed pawls pivoted to the radial arms of a hub and provided with pins operated by a cam-ring provided with handles, and by a set of gear-wheels connected by a shaft, spiral spring, and clutch-pin, and provided with a forked arm, a rod and a lever, and a connecting-sleeve, whereby the said main gear-wheel can be driven at a fast or a slow speed.

The cam-wheel which drives the cutting apparatus is made in two parts with scalloped rims, and connected by bolts and set-screws, whereby the said cam-wheel can be adjusted to receive a larger or a smaller pin and to take up the wear, all as hereinafter fully described, and pointed out in the claims.

A represents the drive-wheels, the axle B of which revolves in bearings C, attached to the frame D; and E F G, backing-ratchets of the usual construction.

Upon the middle part of the axle B is placed a loose sleeve, H, upon the end of which is formed, or to it is secured, a large gear-wheel, I.

Upon the outer side of the gear-wheel I is formed, or to it is attached, an internally-toothed ratchet-wheel, J, with the teeth of which engage pawls K, pivoted in and to the slotted ends of the radial arms L. The pawls K should be so arranged that when the first pawl is engaged with a tooth of the ratchet-wheel J the second pawl will be at a distance from the engaging-point of its tooth equal to one-quarter the space of one tooth, the third pawl at one-half the space, and the fourth pawl at three-quarters the said space, so that when the said pawls are thrown against the teeth of the said ratchet-wheel there can never be a movement greater than one-fourth of the space of one tooth before engagement takes place. The engaging ends of the pawls K are held against the teeth of the ratchet-wheel J by springs M, attached to the arms L, as shown in Fig. 4. The rear ends of the pawls K project, and to them are attached outwardly-projecting pins N.

The hub L' of the radial arms L is made long, is secured to the axle B by set-screws or other suitable means, and upon it is placed a ring, O, upon which are formed four cams, and to which are attached four radial handles, P, for convenience in adjusting the said cam-ring. The projecting pins N of the pawls K rest upon the cams of the ring O, so that the said pawls can be withdrawn from, and allowed to engage with, the teeth of the ratchet-wheel J by turning the cam-ring O upon the hub of the radial arms L.

The cam-ring O is kept in place upon the hub of the radial arms L by a collar, Q, placed upon the said hub, and secured in place by set-screws or other suitable means.

The teeth of the gear-wheel I mesh with the teeth of the pinion-wheel R, attached to the shaft S, which revolves in bearings T, attached to the rear part of the frame D.

Upon the shaft S is placed a cam-wheel, which is made in two parts, U V, having the adjacent edges of their rims scalloped to form a zigzag groove, W, as shown in Fig. 1. The part U of the cam-wheel is keyed or other-

wise, rigidly secured to the shaft S, and the part V is placed loose upon the said shaft S, and is secured to the said part U by bolts X and set-screws Y, so that the said part V can be readily adjusted to form a groove, W, of such a width as the size of the pin Z may require, and to take up the wear. The pin Z enters the groove W, is provided with a tubular washer to lessen the friction, and is attached to the rear end of the lever *a*, so that the said lever will be vibrated by the revolution of the cam-wheel U V. The lever *a* is provided with a long hub, which rocks a pin, *b*, attached at its upper end to the frame D, and at its lower end to a keeper, *c*, secured to the said frame D, so that the said lever *a* will be held horizontal. The forward part of the lever *a* passes through and vibrates in a horizontal slot in a guide, *d*, attached to the forward end of the frame D, or to a support secured to the said frame.

Upon the forward end of the lever *a* is formed a ball, *e*, which works in a socket, *f*, formed in the adjacent faces of the upper end of the pitman *g* and of the bar *h*, secured to the said pitman, the said socket being made smaller than the ball *e*, so that the wear can be taken up by drawing the said pitman *g* and bar *h* closer together. The lower end of the pitman *g* is hinged to the eye *i* in the inner end of the cutter-bar *j*, which vibrates in a recess in the finger-bar *k*, in the ordinary manner. The inner end of the finger-bar *k* is attached to the inner shoe, *l*, which is supported by a small wheel, *m*, placed in a slot in the shoe *l*, and journaled to the said shoe or to supports attached to it. To the inner shoe, *l*, is attached the inner track-clearer, *n*, which also serves as a guard to protect the wheel *m* from the cut grass. The inner shoe, *l*, is hinged to the lower end of the bar *o*, which is hinged at its inner end to a support, *p*, attached to the frame D, and is strengthened against the draft-strain by a brace-bar, *q*, attached at its forward end to the said bar *o*. The rear end of the brace-bar *q* is pivoted to a support attached to the rear part of the frame D. The connection between the bar *o* and the shoe *l* is strengthened by the arm *r*, the rear end of which is attached to the said bar *o*, and its forward end is pivoted in an eye, *s*, attached to the forward part of the said shoe *l*.

To the inner shoe, *l*, is attached an arm, *v*, which is bent upward and outward to rest against the lower side of the lower end of the hinged bar *o*, to limit the downward movement of the outer end of the finger-bar *k*, and adapt the said cutter-bar to be raised by raising the lower end of the said bar *o*.

t is the tongue which is attached to the frame D, and is connected at its rear part with the axle B.

To the side of the tongue *t* is pivoted a lever, *u*, to the lower part of which is attached the segment *v* of a grooved pulley.

To the upper corner of the segment *v* is at-

tached the end of a chain, *w*, which passes along the groove of the said segment, and at its lower end is attached to the bar *o*, so that the finger-bar *k* can be readily raised by operating the lever *u*.

To the lever *u* or segment *v* is pivoted a hook-pawl, *x*, which engages with the ratchet-teeth formed upon the curved edge of the plate *y*, attached to the tongue *t*, to hold the lever *u*, and with it the finger-bar *k*, in any position into which they may be adjusted. The pawl *x* is held down upon the ratchet-plate *y* by a spring, *z*, attached to the lever *u* or segment *v*.

To the pawl *x*, at or near its forward end, is attached the lower end of a rod or chain, *1*, the upper end of which is attached to an elbow-lever, *2*, pivoted at its angle to the upper part of the lever *u*, so that by operating the lever *2* the pawl *x* will be raised, allowing the said lever *u* to be moved forward to lower the cutter-bar *j* to the ground.

To the axle B, at the outer side of the tongue *t*, is keyed or otherwise secured the gear-wheel *3*, the teeth of which mesh into the teeth of the smaller gear-wheel *4*, attached to the shaft *5* near its outer end. The shaft *5* revolves in bearings *6*, attached to the frame D, and upon it, near its inner end, is placed a small loose gear-wheel, *7*.

Upon the inner end of the hub of the gear-wheel *7* are formed clutch-teeth *8*, to engage with a pin, *9*, passing through and secured to the shaft *5*, and cause the said shaft *5* to carry the said gear-wheel *7* with it in its revolution. The teeth of the gear-wheel *7* mesh into the teeth of a larger gear-wheel, *10*, attached to the end of the sleeve H. The gear-wheel *7* is pressed inward, to cause its clutch-teeth *8* to engage with the pin *9*, by a spiral spring, *11*, placed upon the shaft *5*, with its ends resting against the inner sides of the gear-wheels *4* *7*.

Against the inner side of gear-wheel *7* rests the forked upper end of the arm *12*, attached to the rear end of the rod *13*, which rocks in bearings *14*, attached to the frame D, or the platform *15* of the machine.

To the forward end of the rod *13* is attached an upwardly-projecting arm or lever, *16*, by means of which the rod and forked arm *13* *12* can be operated to push the gear-wheel *7* back from the pin *9*, and to allow said gear-wheel to be forced forward by the spring *11*. The rod and forked arm *13* *12* are locked in place, when holding the gear-wheel *7* back from the pin *9*, by a spring-catch, *17*, attached to the tongue *t*, and which engages with the lever *16*. The forked arm *12* is held away from the gear-wheel *7*, when the said gear-wheel is engaged with the pin *9*, by the pressure of the wheel and spring *11*, by its own weight, and by the weight of the lever *16*.

With this construction, when the mower is to be run at ordinary or slow speed, the lever *16* is adjusted to throw the gear-wheel *7* out of gear with the pin *9*, allowing the said gear-wheel to run free, and the cam-ring O is adjusted to allow the pawls K to engage with the

ratchet-wheel J and throw the gear-wheel I into gear with the axle B, so that the cam-wheel U V will be driven directly from the axle and at a slow speed.

5 When a greater speed is required, the lever 16 is adjusted to allow the spring 11 to throw the gear-wheel 7 into gear with the pin 9, so that the gear-wheel I will be driven from the axle B through the gear-wheels 3 4 7 10, the
10 shaft 5, and the sleeve H, and will thus be driven at a greater speed. These adjustments can be readily made while the machine is at work, and the sickle-bars j driven at a fast or slow speed, as the condition of the grass may
15 require.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a mower, the combination, with the axle B and the main gear-wheel I, of the
20 ratchet-wheel J, secured to the gear-wheel I, the hub L', secured to the axle, and having radial arms L, the spring-pressed pawls K, pivoted in the ends of the said arms, having pins N, and the cam-ring O, having handles
25 P, and free to turn on said hub, substantially as herein shown and described, whereby the said gear-wheel and axle can be readily thrown into and out of gear with each other, as set forth.

30 2. In a mower, the combination, with the

axle B and the main gear-wheel I, of the gear-wheels 3 4 7 10, the shaft, spring, and clutch-pin 5 11 9, the forked arm, rod, and lever 12 13 16, and the sleeve H, substantially as
35 herein shown and described, whereby the said gear-wheel and axle can be readily thrown into and out of gear with each other, as set forth.

3. In a mower, the combination, with the axle B and the main gear-wheel I, of the
40 ratchet-wheel J, the hub L', having radial arms L, the spring-pressed pawls K, having pins N, and the cam-ring O, having handles P, and the gear-wheels 3 4 7 10, the shaft, spring, and clutch-pin 5 11 9, the forked arm, rod, and lever 12 13 16, and the sleeve H,
45 substantially as herein shown and described, whereby the said main gear-wheel can be driven at a slow or a fast speed, as set forth.

4. In a mower, the cam-wheel made, substantially as herein shown and described, in
50 two parts, U V, having scalloped rims, and connected by bolts X and adjusting-screws Y, whereby the said cam-wheel can be adjusted to receive a larger or a smaller pin and to take up the wear, as set forth.

BENJAMIN SAUNDERS.

Witnesses:

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