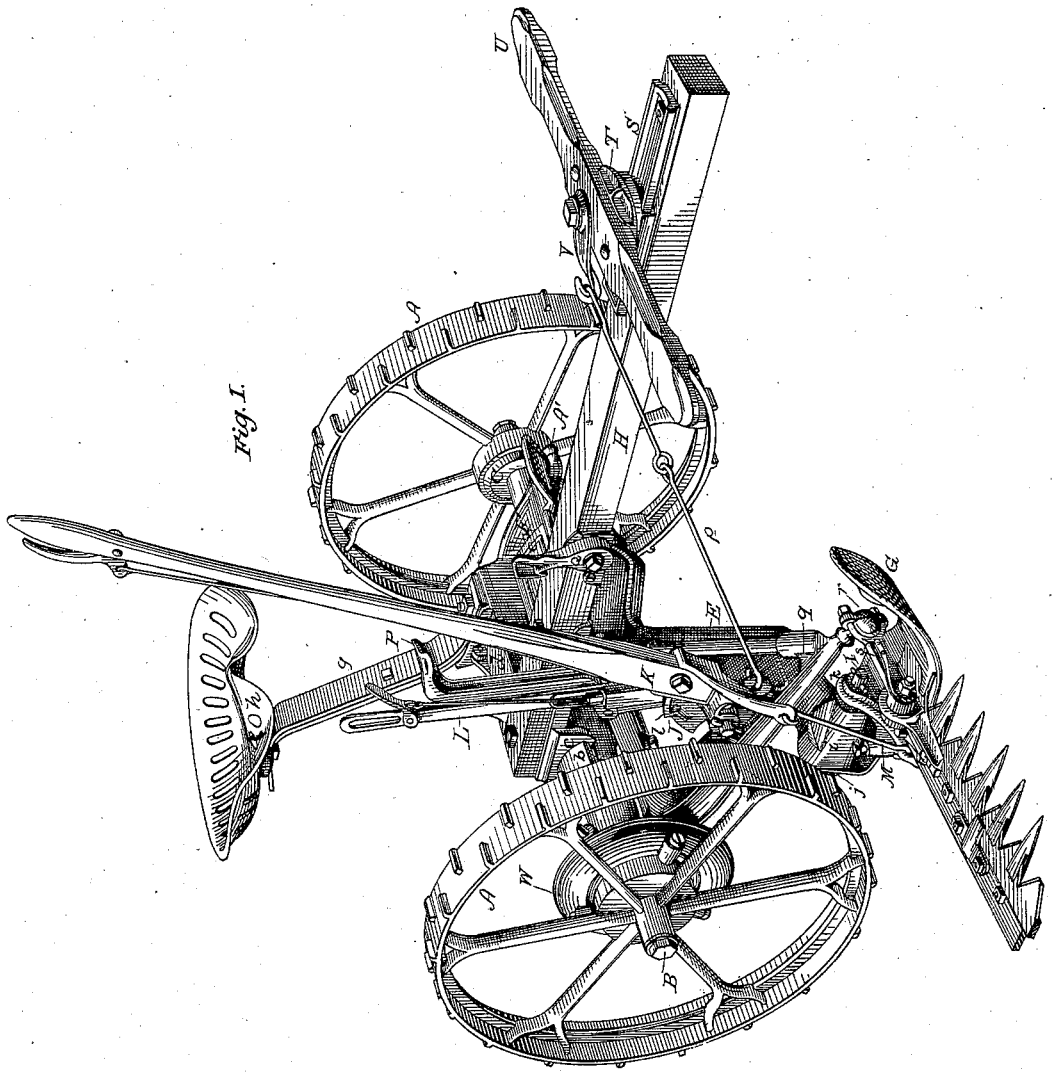
6 Sheets—Sheet 1.

W. N. WHITELEY.

Mower.

No. 197,916. Patented Dec. 4, 1877

Fig. 1.



WITNESSES:

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Aug. L. Jordan

INVENTOR:

Wm N. Whiteley

By his atty

R. D. Smith

See Torrquist Model

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W. N. WHITELEY.

Mower.

No. 197,916. **Patented Dec. 4, 1877.**

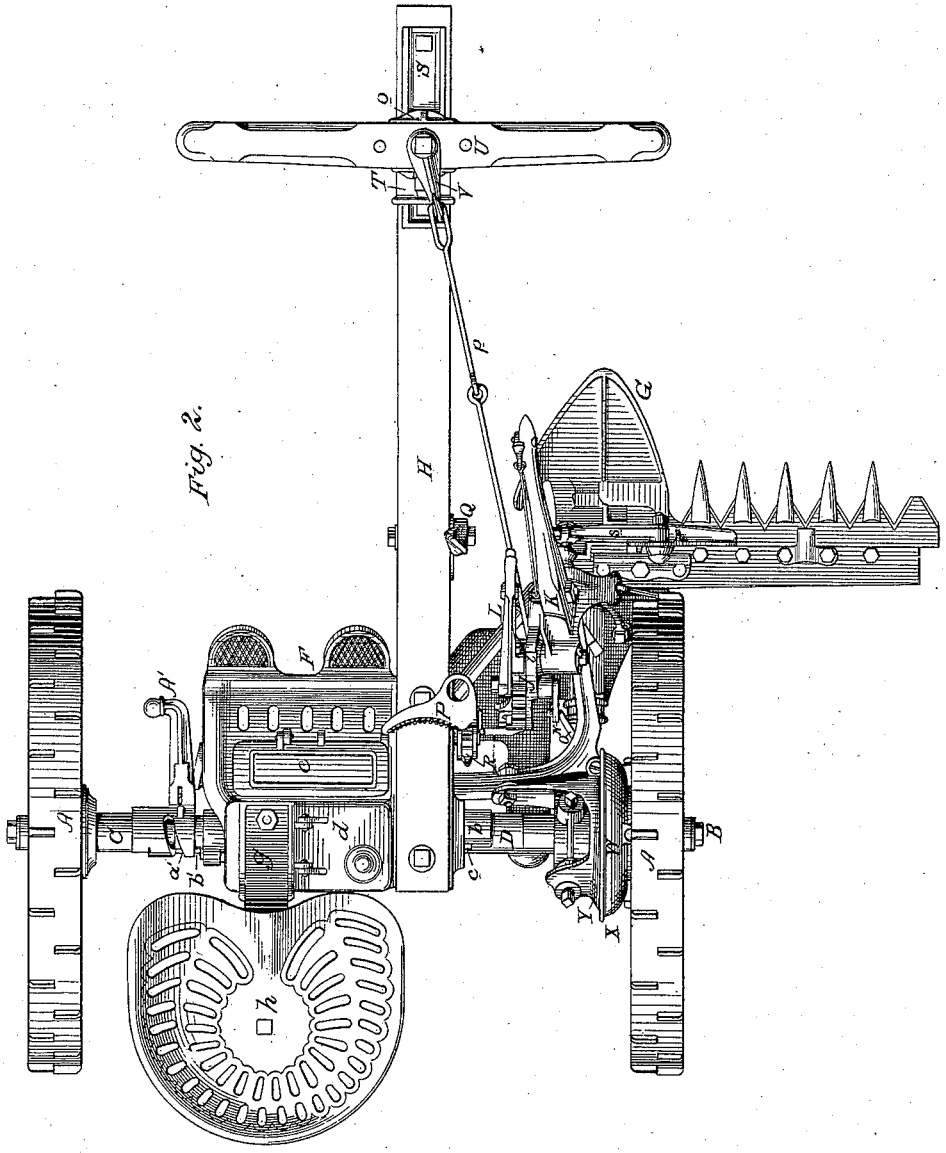

Fig. 2.

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R. D. Smith.

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No. 197,916. **Patented Dec. 4, 1877**

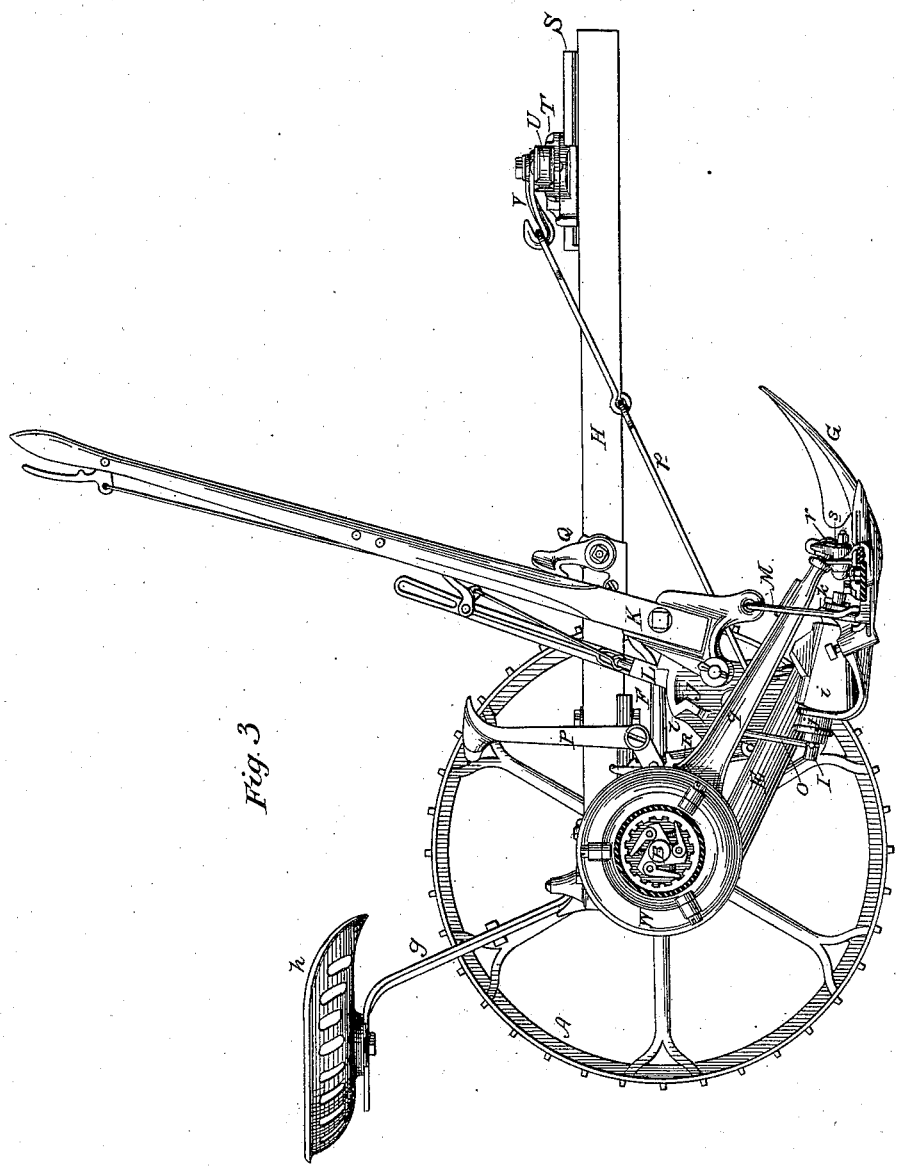

Fig. 3

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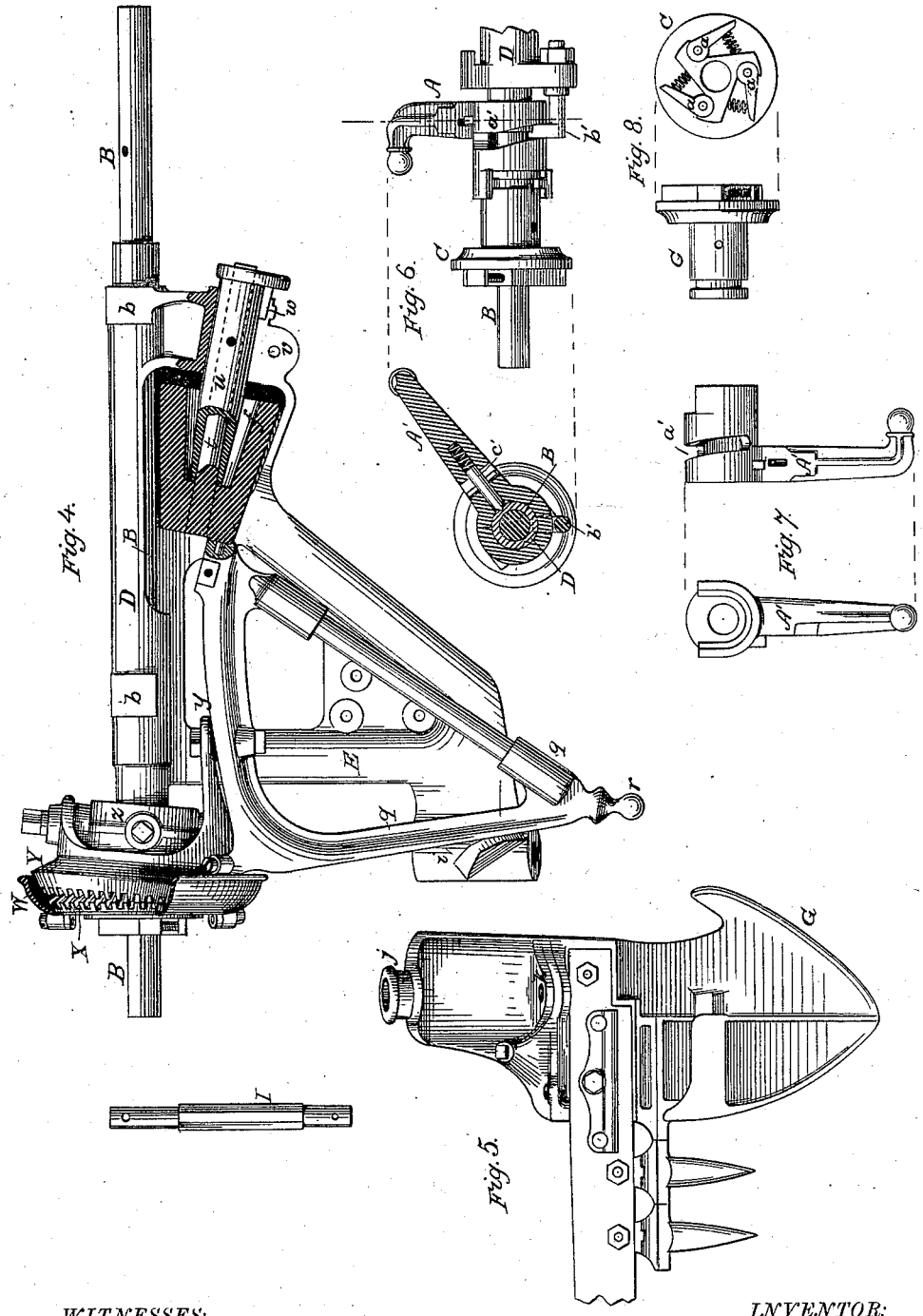
No. 197,916. **Patented Dec. 4, 1877**



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INVENTOR:

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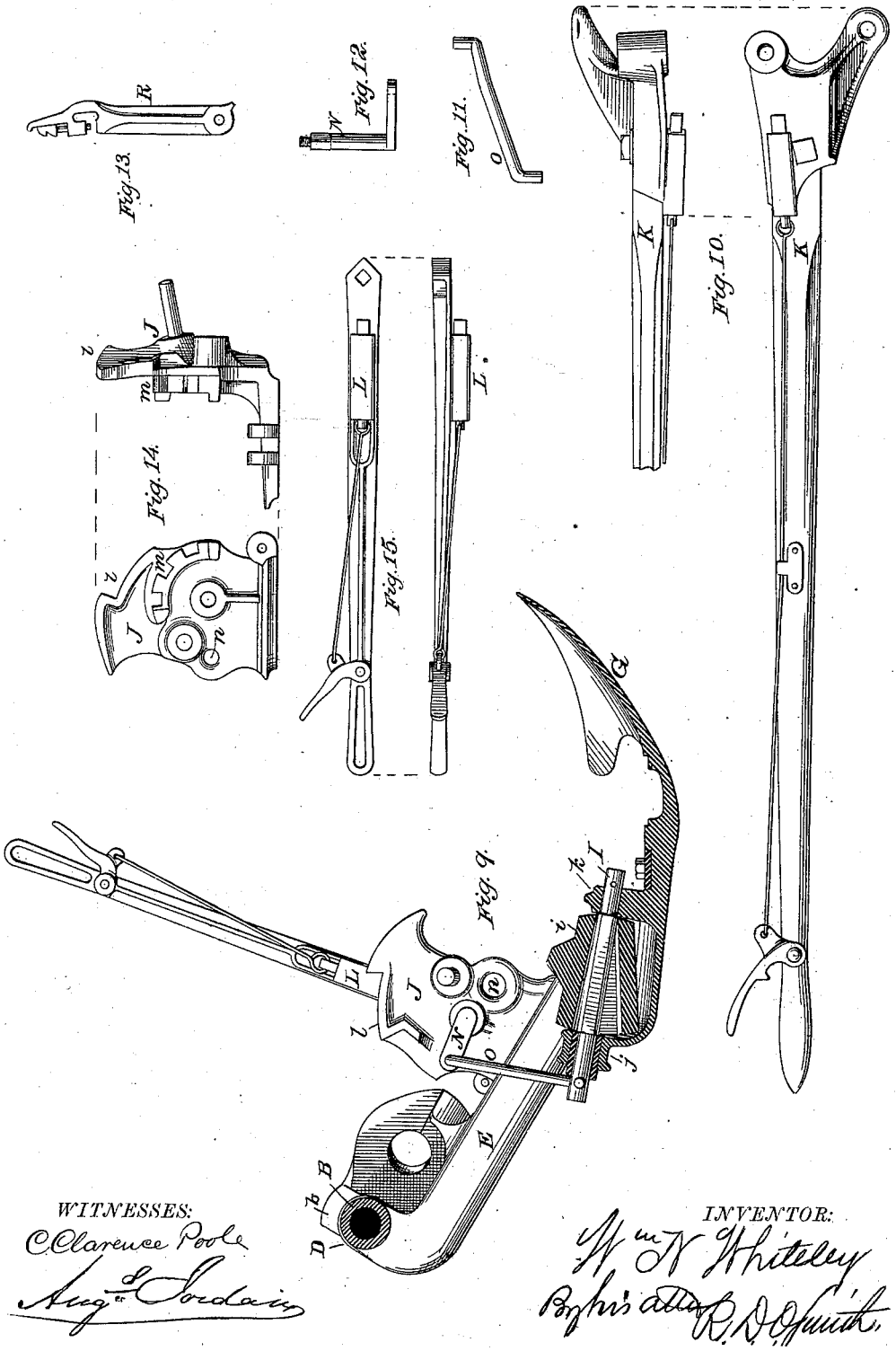
W. N. WHITELEY.

Mower.

No. 197,916. Patented Dec. 4, 1877.



WITNESSES:

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INVENTOR:

Wm N Whiteley

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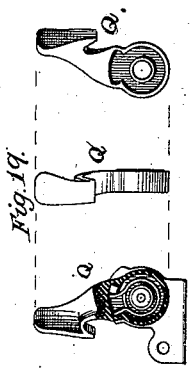
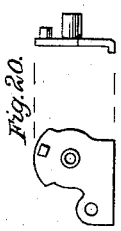
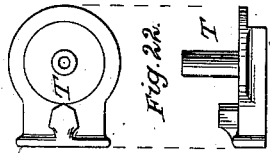
W. N. WHITELEY.

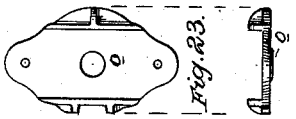
Mower.

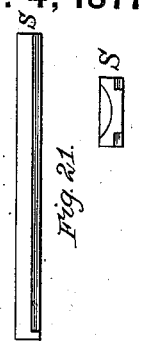
No. 197,916. Patented Dec. 4, 1877.

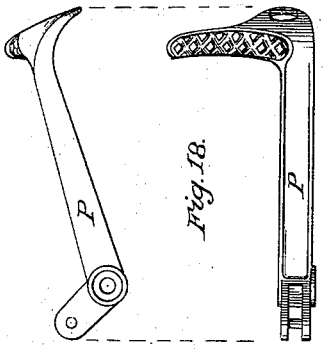


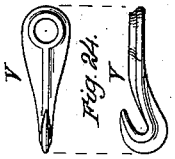


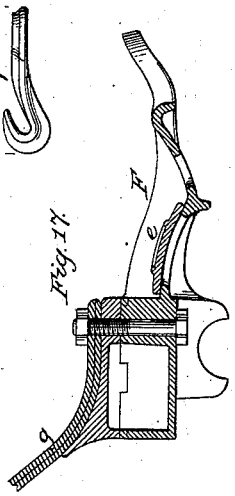


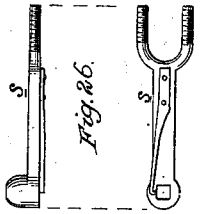


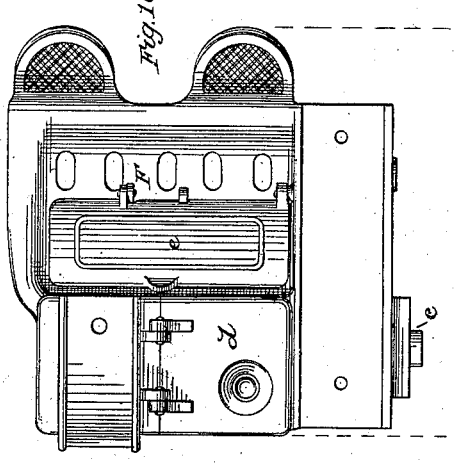


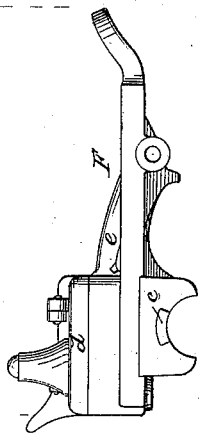


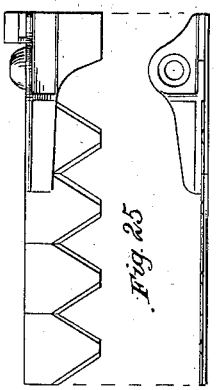












WITNESSES:

C. Clarence Poole

Aug. L. Jordan

INVENTOR:

Wm. N. Whiteley

By his attys

R. D. Smith.

UNITED STATES PATENT OFFICE.

WILLIAM N. WHITELEY, OF SPRINGFIELD, OHIO.

IMPROVEMENT IN MOWERS.

Specification forming part of Letters Patent No. **197,916**, dated December 4, 1877; application filed July 10, 1877.

To all whom it may concern:

Be it known that I, WILLIAM N. WHITELEY, of Springfield, in the county of Clarke and State of Ohio, have invented a new and useful Improvement in Mowing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my machine. Fig. 2 is a plan of the same. Fig. 3 is a side elevation of the same. Fig. 4 is a plan of the main and oscillating frame. Fig. 5 is a plan of the inner shoe. Fig. 6 is a plan and section of the shipping lever and clutch; Fig. 7 is a side and an end elevation of the clutch-lever detached. Fig. 8 is a side and an end elevation of the pawl and hub detached. Fig. 9 is a vertical longitudinal sectional elevation of the inner shoe and main-frame arm by which the same is supported. Fig. 10 is a side and an end elevation of the lever for lifting the outer end of the cutters. Fig. 11 is a link connecting the tilting-lever with the shoe. Fig. 12 represents the crank of the tilting-lever. Fig. 13 represents the lifting-lever link. Fig 14 is a side and an edge elevation of the lever-fulcrum bracket. Fig. 15 represents the tilting-lever. Fig. 16 is a plan of the foot-plate of the main frame. Fig. 17 is a longitudinal section through the foot-plate; Fig. 18, plan and elevation of foot-lever; Fig. 19, elevations and section of the foot-lever latch; Fig. 20, side and front elevation of foot-lever-latch bracket; Fig. 21, side and end elevation of double-tree slide upon the tongue; Fig. 22, plan and elevation of the double-tree pivot-plate slide; Fig. 23, plan and elevation of the double-tree pivot-plate; Fig. 24, plan and elevation of the double-tree draft-hook; Fig. 25, plan and elevation of the heel of the cutter-bar; Fig. 26, side and edge view of the pitman; Fig. 27, section through pitman-joint.

This invention relates to that class of mowing-machines known as front-cut machines. Motion is transmitted from the driver to the cutters by means of an oscillating gear-wheel and an attached vibrating arm, whereby the rotary motion of the driving-wheel is not only transposed into a reciprocating motion, but the same is multiplied in velocity to the requisite degree without the interposition of intermediate gears.

That others may fully understand my improvement, I will particularly describe it.

A A are the main bearing and driving wheels, which are mounted loosely upon the shaft-axle B, but geared thereto by the clutch-heads C and pawls *a a*, so that, as either or both of said wheels are revolved, the shaft will be caused to revolve also. The wheels may be free to turn backward, however, without revolving the shaft.

The main frame consists of a tubular box, D, through which the shaft B passes and has its bearings, and a triangular projecting frame, E, to the forward end of which the lever-bracket and the shoe-connections are made.

A foot-plate, F, is mounted upon the main frame in such a way that it may be attached or detached, and securely held without the use of bolts, and so that the said foot-plate may move upon said frame as upon a joint. This is accomplished by means of lugs *b b* cast upon the frame D, and corresponding lugs *c c* upon said foot-plate, so that when the said foot-plate is moved to a certain position (over backward) the lugs *c* will be behind the lugs *b*, and if the foot-plate is then moved forward upon the frame D as a center, said lugs *c* will enter below said lugs *b* and interlock with them, so as to prevent the displacement of said foot-plate while permitting it to move freely upon the frame D as a center. This relative movement of the frame and foot-plate is required, because the shoe G and cutting apparatus are attached to the former, and the draft-pole H to the latter, and these require facility for independent movement to enable them to conform to the varying surface of the ground over which they are drawn. In this case these independent movements have a common center at the axis of the shaft D.

The foot-plate F is cast with a receptacle, *d*, having a hinged cover attached to receive the oil-can and tools; and it also has an opening, covered by a hinged door, *e*, through which access may be had to the balance-wheel *f* and its bearings. It also has a seat for the lower end of the leg *g* of the driver's seat *h*.

At the forward end of the triangular frame E there is a box, *i*, having a longitudinal wedge-

shaped orifice, through which the coupling-bolt I passes, its ends being seated in lugs *j k* of the shoe G. This coupling-pin fits the box *i* laterally, so that there can be little or no side shake, but is free to slide up and down at one end therein as the points of the guards and cutters are tilted.

A bracket, J, is securely bolted to the upper surface of the frame E, and it is provided with bearings for the two levers K L and the rack *l m*, for the engagement of their holding-latches. The lever K has a bell-crank at its lower end, and is connected to the base of the cutting apparatus by a connecting-rod, M, so that by pulling said lever over backward the outer ends of the cutting apparatus can be raised up to clear any obstructions which may be in its road. The holding-latch on said lever is opened by a hand-piece, as usual, and may be permitted to engage with the rack *l*, and retain the cutting apparatus in any elevated position desired.

The lever L is provided with a crank-piece, N, which passes through a bearing in the bracket J, and is connected by a link, O, to the rear end of the coupling-bolt I, so that the rear end of the shoe may be raised or lowered at will by means of the lever L; and it may be held in any desired position by engagement of the latch-bolt on said lever with the rack *m*.

The bracket J has also a loop, *n*, for the attachment of the direct draft-rod *p*. A bell-crank foot-lever, P, is pivoted upon the side of the foot-plate F, and is connected to the frame E by a connecting-rod, R. By pushing said foot-lever over forward the entire cutting apparatus and front end of the frame E may be raised from the ground, and it may be sustained in that position by the automatic latch Q, which is pivoted to the tongue directly in front of the lever P, and in such a position that it may be released by the foot at the same moment that the lever P is commanded and controlled by the foot.

The tongue H is provided with a flanged plate, S, which is bolted lengthwise to its upper surface, and a slide, T, is fitted to move thereon and bear the pivot-plate *o* of the double-tree U, to which also is secured a hook-plate, V, to which the draft chain or link *p* is attached, so that, the double-tree being free to slide back and forth on the plate S, the draft is transferred directly to the bracket J, which is bolted to the frame E, and is thereby transmitted directly to the cutting mechanism. Therefore the strain does not come in any degree upon the joints or parts of the frame.

A bevel-gear wheel, X, is rigidly secured to the main shaft inside the inner clutch-collar C, so that it is caused to revolve whenever the main axle is caused to revolve. This bevel-wheel is partly covered and protected from the dropping of mud and dirt from the wheel by a dishing cover or shield, W.

An oscillating bevel-gear wheel, Y, is mounted upon a gimbal-ring, *z*, pivoted upon the frame D, and said gear-wheel meshes with the wheel X, so as to be driven by its revolution.

At one side of said wheel Y an arm, *y*, projects and is joined to a small crank-wheel, *f*, the axis of which intersects the axis of shaft B at the point of its intersection with the transverse axis of the ring *z*.

The rotation of the wheel *f* carries the extremity of the arm *y* around the axis of said wheel, and the adjustment of the parts is such that one revolution of said wheel *f* will cause an oscillatory movement of the wheel Y, which will cause it, as it were, to roll upon the wheel X and bring every point of their surfaces successively in contact.

This oscillatory movement will also be combined with a forward movement, whose amplitude is determined by the radius of revolution of the point of the arm *y*. The wheels X and Y being geared together, it follows that while the wheel Y oscillates, the motion of the wheel X is continuously forward, and at each oscillation of the wheel Y a particular tooth of the same continuously retreats and re-engages with the wheel X at a new point.

When the power is applied directly to produce a continuous rotation of the wheel X, then the oscillation of the wheel Y is produced by the forward motion of said wheel X, which is continually carrying the teeth of said wheel Y forward, and thereby causing the crank-wheel *f* to revolve, continually presenting new teeth for engagement and withdrawing those already engaged.

In the mechanism shown in the drawings the proportions are such that the wheel *f* will be caused to make eighteen revolutions to each revolution of the wheel X, whereby at each oscillation any given tooth of wheel Y skips two teeth of wheel X at each re-engagement.

The arm *y* has a triangular extension-frame, *q*, at the apex of which is a ball, *r*, to form one part of a joint with the pitman *s*.

It is apparent that the oscillatory movement of the wheel Y and its arm *y* is converted into a vibratory or reciprocating movement at the joint-ball *r*, so that the pitman *s* will produce the required reciprocation of the cutters, and that this reciprocation will take place uninterruptedly in whatever position the cutting apparatus may be placed, the only difference between a horizontal and vertical position being a slight difference in the length of the reciprocation.

The balance crank-wheel *f* is constructed with a deep central recess in its larger end, and an axle-pin, *t*, set rigidly in the center of the smaller end, but projecting through said recess.

The axle-bearing of said pin is in a sleeve-box, *u*, which is inserted through a slit seat in the frame, and held there securely by a clamp-screw at *v*. A feather, *w*, upon said sleeve *u* extends into the recess of the wheel *f* to the bottom, so that the working bearing of said wheel is within its own periphery, and side wear is thereby avoided. The connection

between the wheel *f* and the arm *y* is by an eccentric or crank pin, set in the end of said wheel, and entering a seat in the end of said arm. This connection of the arm *y* and the wheel *f* being upon the end of the latter, it is not necessary to provide any other means for keeping said wheel in place.

The frame D and all its attachments are movable bodily endwise upon the axle-shaft B sufficiently far to carry the wheels X Y out of mesh, and thus throw the machine out of operation. This movement of the frame is effected at the will of the driver by a clutch-lever, A′, which is located upon, and permanently attached to, the collar C by means of a peripheral groove therein and a rib upon the lever which projects into said groove. The inner end of the sleeve of the lever A′ is provided with a peripheral cam-slot, *a′*, and the inner end of the hook-bolt *b′*, which is secured to the frame D, enters said slot, so as to cause said frame to move endwise as said lever is turned over one way or the other, and cause the wheels X Y to engage or disengage, as the case may be.

A pointed pin, *c′*, with a spring behind it, is laid in a proper radial recess in the lever A′, and its point rests against the surface of frame D, and said pin interlocks therewith, so that said lever is held against ordinary accidental displacement.

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

1. The frame E, provided with the slotted box *i*, the slot of which flares to the rear, combined with the shoe G and cutting apparatus, and the coupling-pin I, working in said slot, and the tilting-lever L, substantially as set forth.

2. The slotted box *i*, combined with the coupling-pin I and the shoe G, whereby the cutting apparatus is free to tilt on its axis to raise or depress the points of the cutters.

3. The tilting-lever, mounted upon the adjustable frame E, and arranged to operate through the aperture of the triangular driving-arm *q*.

4. The bracket J, constructed in one piece, with bearings for the levers K and L, and with racks *l m* for engagement of the holding-latches of said levers.

WILLIAM N. WHITELEY.

Witnesses:

JAS. JOHNSON, JR.,

PERCY NORTON.