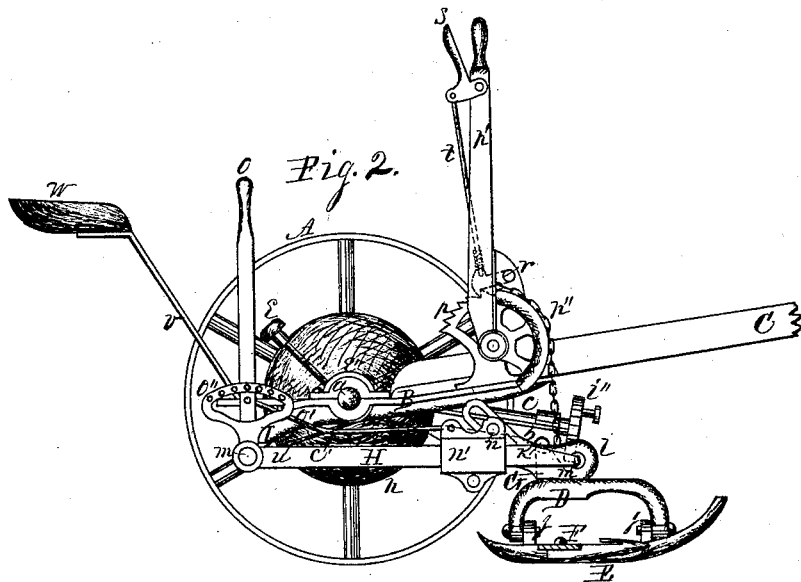
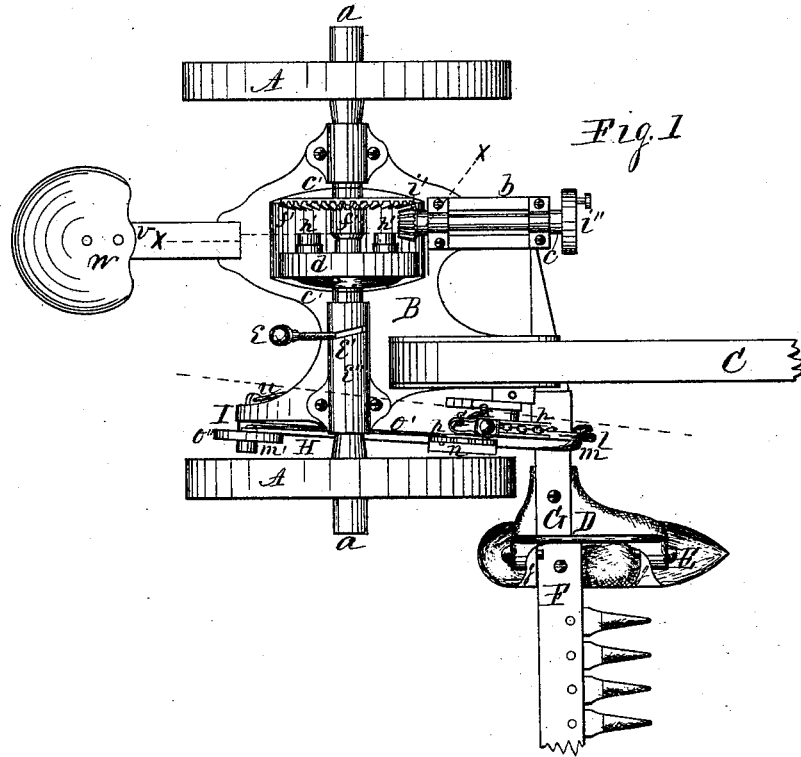


L. D. MINNICK.
Mowing-Machine.

No. 210,622.

Patented Dec. 10, 1878.



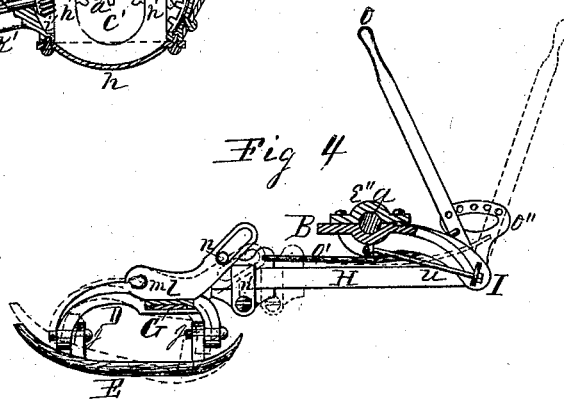
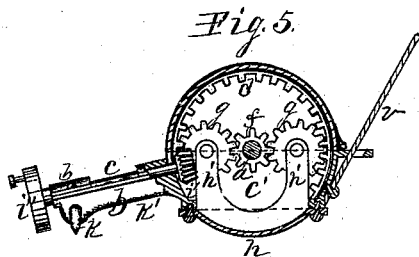
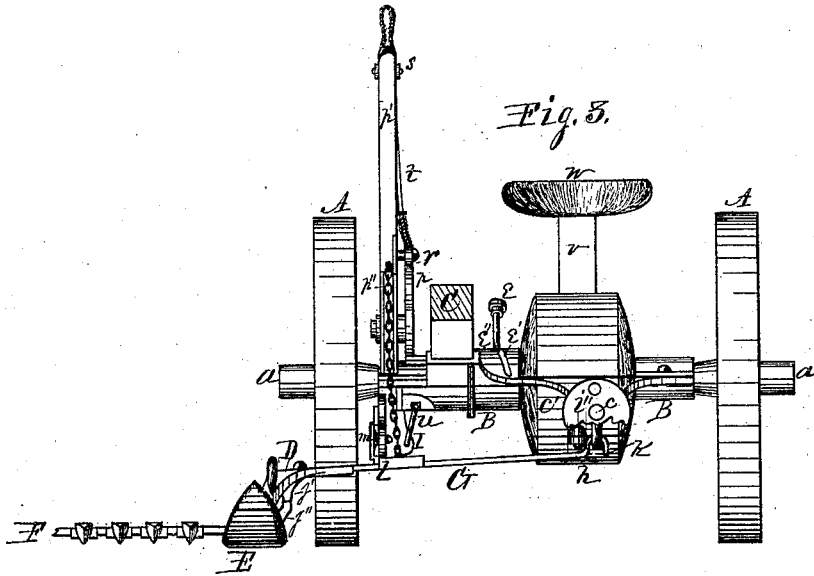
Attest.
A. O. Behel
Clerk

Inventor.
Lorenzo D. Minnick
Per. Jacob Behel
Atty.

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Attest.
G. D. Behel.
Clerk of the Court.

INVENTOR.
L. D. Minnick.
By Jacob Behel
Atty

UNITED STATES PATENT OFFICE.

LORENZO D. MINNICK, OF ROCKFORD, ILLINOIS.

IMPROVEMENT IN MOWING-MACHINES.

Specification forming part of Letters Patent No. 210,622, dated December 10, 1878; application filed September 19, 1878.

To all whom it may concern:

Be it known that I, LORENZO D. MINNICK, of the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Mowing-Machines, of which the following is a specification:

This invention relates to that class of mowing-machines known as the "two-wheeled floating-bar machines."

The object of this invention is to improve this class of machines in the connection of the draw-bar with the machine, also in connection of the push-bar with the draw-bar, and in the rocking of the cutter-bar, all of which, with other minor improvements, will be hereinafter more fully explained.

In the accompanying drawings, Figure 1 is a plan view of a mowing-machine embodying my invention, of which Fig. 2 is a side elevation, and Fig. 3 a front elevation. Fig. 4 is a lengthwise vertical cut on dotted line *x*, as seen from the left-hand side of the machine. Fig. 5 is a lengthwise vertical section cut on dotted line *y*, as seen from the left-hand side of the machine.

In the several figures, A represents traction-wheels, mounted loosely on an axle, *a*, and are provided with ratchets and pawls, which cause the axle to revolve with the wheels in their forward movement, and permit the wheels in their backward movement to revolve on the axle. These parts are in every particular substantially the same as found in some mowing-machines now in use.

B represents the main frame, which is of plate form and of proper outline, as represented, adapted to furnish bearings and supports for the several parts of the machine, and is mounted on the axle *a* in such a manner as to permit the axle to revolve freely in its bearings in the frame. This frame is provided with a forward-extending-arm, to which the tongue C is connected, and from its forward edge projects an arm, *b*, which forms the support in which the crank-shaft *c* is fitted to revolve. To this extent this main frame may be considered substantially the same as other frames found in mowing-machines now in use. This frame is formed with a fixed portion of a gear-case *e'*, of sufficient size and suitable form to admit the

several gear-wheels to revolve on and about the axle. This gear-case is open on its under side, for a purpose hereinafter to be explained.

d represents an internal gear-wheel, mounted loosely on the axle within the gear-case. The hub of this gear-wheel is provided with a saw-toothed clutch, adapted to receive a similar toothed clutch feathered to slide lengthwise on the axle and to revolve therewith. This clutch is operated by means of the weighted lever *e*, moving in the oblique slot *e'* in cap *e''*, which will slide the feathered clutch in contact with the clutch-toothed hub of the internal gear-wheel, or release it therefrom, as the weighted lever is moved forward or backward in the oblique slot.

f represents a spur-pinion, and *f'* a bevel-toothed gear-wheel, fixed or formed on the ends of the sleeve *f''*, fitted to revolve on the axle, and placed thereon in such position that the spur-pinion *f* shall be in the same plane with the internal gear-wheel. *g* are intermediate gear-wheels placed on opposite sides of the axle, between the pinion *f* and the internal gear-wheel, *d*, in such relative position that the teeth of the several wheels shall engage each other in a working manner.

At *h* is shown the lower detachable portion of the gear-case, constructed in a separate piece, of proper form to close the opening in the fixed portion of the gear-case *e'*, to which it is firmly secured by sufficient screw-bolts. This lower detached portion of the gear-case is constructed with arms *h'*, which rise from its inside, one in front and the other in rear of the axle, and their upper ends are provided with stud-journals, which project from their sides, and on which the intermediate gear-wheels, *g*, are fitted to revolve.

The opening in the lower portion of the fixed case *e'* freely admits the arms *h'*, with the studs on which the intermediate gears revolve, to be passed upward through it into position in the case.

By this construction of the gear-case in separate parts, having the arms on which the intermediate gear-wheels are supported separate from the main frame or bed-plate, I am enabled to mount the intermediate gear-wheels with greater accuracy and with less labor than when the parts are cast with the frame in one

piece; and in case the supporting-arms, from any cause, be rendered unserviceable, they can be readily replaced without renewing the main frame, and there is less liability to lose the parts in casting than when cast in one piece.

c represents the crank-wheel shaft, fitted to revolve in bearings in the supporting-arm *b* of the main frame. Its inner end is fitted with a bevel-toothed pinion, *i*, the teeth of which engage the teeth of the bevel-toothed wheel *f'*, and its outer end is provided with the crank-wheel *i''*, which carries the wrist-pin, to impart motion to the cutting-knife by pitman-connection, as common in such machines. The gear-case is provided with an upper hinged portion to inclose the gear-wheels, as is common in this class of machines.

At *D* is shown a yoke, consisting of arms which curve downward and outward, and between which is pivoted the shoe *E* by arms *j*, which rise from its upper face, and are connected by pivot-bolts, which pass lengthwise of the machine through each pair of depending arms of the yoke and uprising ears of the shoe, the axis of the pivot-bolts being parallel with the line of draft. *F* is a finger-bar of the usual form, fixed to the shoe as it is common to connect such parts, and the finger-bar is provided with fingers adapted to receive a cutting-knife of the usual construction in the usual manner. The inner portion of the yoke *D* is provided with an inward-projecting arm, grooved or recessed to receive the outer end of the coupling-arm *G*, which is firmly bolted thereto. The yoke *D* is formed with a depending stop-arm, *j'*, and the shoe *E* with an uprising stop-arm, *j''*, which meet and limit the downward movement of the finger-bar relatively with the coupling-arm. The draw-bar *G* extends across the forward end of the machine in front of the traction-wheels, and its extreme end is made in an offset hook form, as clearly shown at *k*, which hooks into an eye formed in the forward portion of the rib *k'*, formed on the under side of the crank-shaft-supporting arm *b*. This offset hook-connection of the coupling-arm with the main frame permits a free up-and-down movement of the outer end of the coupling-arm and the parts thereto attached, to permit the cutting apparatus to be carried at any height within the limits of the devices, and it also permits a free axial or rolling movement of the cutting apparatus, to permit the guard-fingers to be elevated or depressed, to cut higher or lower, as may be required. This offset hook-connection furnishes a close connection, to resist a pulling or pushing force lengthwise of the coupling-arm, and it also furnishes a ready means of connecting and disconnecting the coupling-arm with the machine, which is accomplished simply by hooking or unhooking the parts.

l represents a draft-arm fixed to the outer portion of the coupling-arm, and extending in front and rear thereof. Its forward extension is made in eye form forward of the coupling-arm, and receives the offset hook

m, formed on the forward end of the push-bar *H*, in such a manner as to permit a pushing and pulling resistance, and to permit the rocking or axial movement of the coupling-arm, and its offset hook form permits it to be readily connected or disconnected without loosening or removing bolts. The push-bar *H* extends from its connection with the draft-arm rearward, and is pivoted at its rear end on a stud, *m'*, projecting laterally from the side of the down-curving arm *I*, which extends from the main frame rearward. This pivotal connection of the push-bar permits the free up-and-down movement of the cutting apparatus, and by means of the forward connection of the push-bar with the draft-arm being forward of the coupling-arm *I* produce a machine with the cutting apparatus forward of the traction-wheels, possessing the advantages of a rear-cut machine, while *I* obviate the more serious objections existing in the rear-cut machine.

The rear portion of the draft-arm *l* extends upward and rearward obliquely across the vertical face of the push-bar, and is provided with a central lengthwise slot, which receives a stud, *n*, projecting from the forward end of the sliding head *n'*, fitted to slide lengthwise on the push-bar.

From this arrangement it will be seen that if the sliding head be moved lengthwise on the push-bar the action of the stud *n*, moving lengthwise in the slot in the draft-arm, will cause the coupling-arm and the parts therewith connected to rock. This action, when the movement of the sliding head is forward on the bar, will cause the depression of the finger-guards, and when rearward thereon will elevate them to cause the machine to cut higher or lower.

o represents a hand-lever, pivoted on the same stud, *m*, on which the push-bar is pivoted. *o'* is a connecting-rod, pivoted to the hand-lever and to the sliding head in such a manner that the backward and forward movement of the free end of the lever will cause the sliding head to move back and forth on the push-bar, which movement, through its connection with the finger-bar, will elevate or depress the guard-fingers. *o''* is a segment, the center hub of which is mounted on the stud *m*, on which the lever is pivoted. Its segmental portion is provided with a series of holes adapted to receive a stud, which projects from the side of the lever, and serves to hold the lever in any adjusted position, to regulate the height of the cut of the machine.

p represents a saw-toothed segment, mounted on the forward portion of the main frame, to the center of which is pivoted a hand-lever, *p'*, having its lower portion of segment sheave form, adapted to receive the lifting-chain *p''*, which is connected to the coupling-arm and to the lever in such a manner that the rear movement of the lever will lift the coupling-arm and the cutting apparatus thereto attached.

r is a hooking spring-pawl, pivoted to the

hand-lever, and adapted to engage the teeth of the ratchet, to hold the cutting apparatus in an elevated position.

s represents a thumb-lever, pivoted to the handle end of the hand-lever, and is connected to the spring-pawl by a suitable connecting-rod, *t*. By means of this connection the spring-pawl can be disengaged from the teeth of the ratchet to lower the cutting apparatus.

U represents a brace-rod, which connects the depending end of the down-curving arm *I* with the under center portion of the main frame, and is employed to re-enforce the down-curving arm to resist the rearward thrust of the push-bar.

By means of this re-enforcement I am enabled to produce a stronger and more reliable machine in this respect and at a less weight. The portion of the main frame rearward of the gear-case is extended, and is slotted to freely admit the seat-spring *v*, which extends down through the slot on the outside of the case, to which its lower end is firmly bolted. The upper end of the seat-spring is bent in proper form, and receives the seat *w*, which is firmly bolted thereto.

By this construction I am enabled to fix the seat-spring with seat mounted thereon firmly in place, and the bolt is relieved from the strain exerted on the spring in supporting the driver.

I claim as my invention—

1. The combination, with the main frame of a mowing-machine, of a straight or practically straight coupling-arm, the inner end of which is provided with a hook, which engages

with the main frame at a point in advance of the supporting-axle, and the outer end having the shoe or arm thereof rigidly secured thereto, whereby the coupling-arm is adapted to be readily detached from the frame, and may be moved vertically and radially, substantially as set forth.

2. The combination, with the coupling-arm, of a push-bar provided with a hooked end attached to the upper side and front portion of the coupling-arm, whereby the push-bar is held from lateral displacement, and the coupling-arm is allowed a rocking movement thereon, substantially as set forth.

3. The combination, with a slotted draft-arm rigidly secured to the coupling-arm, of a sliding head connected with the push-bar, said sliding head provided with a stud which engages in the inclined slot in the draft-arm, substantially as set forth.

4. The combination, with a slotted draft-arm rigidly secured to the coupling-arm, of a sliding head connected with the push-bar, and a hand-lever, ratchet device, and connecting-rod for moving the sliding head to and fro on the push-bar, substantially as set forth.

5. The combination, with the fixed gear-case, of the removable portion having upward-rising arms provided with stud-journals, on which the intermediate gear-wheels are fitted to revolve, substantially as set forth.

LORENZO D. MINNICK.

Witnesses:

A. V. BEHEL,
E. J. BEHEL.