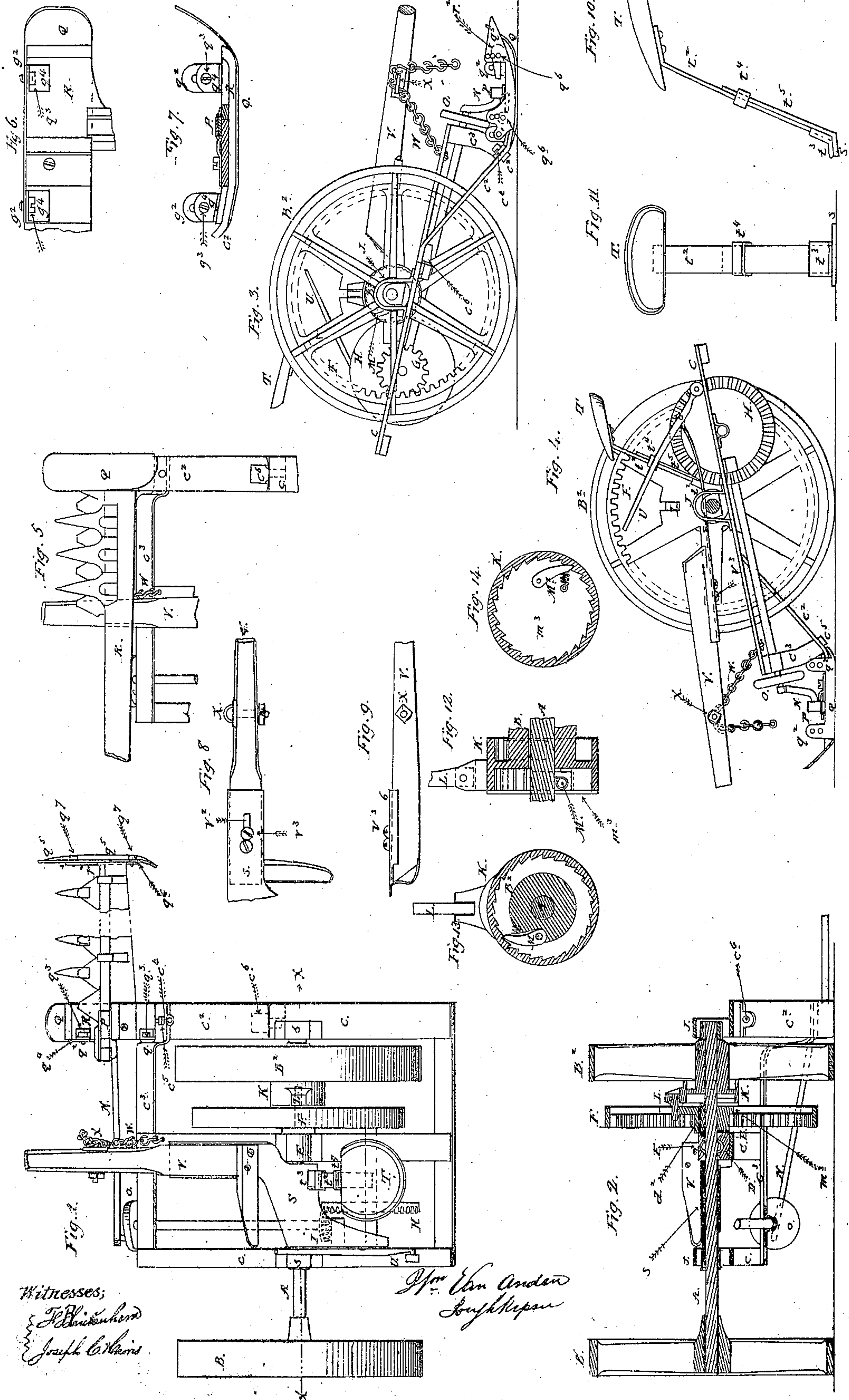


W. Van Anden. Mower.

N^o 36430

Patented Sept. 9, 1862



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IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **36,430**, dated September 9, 1862.

To all whom it may concern:

Be known that I, WILLIAM VAN ANDEN, of Poughkeepsie, Dutchess county, State of New York, have invented certain new and useful Improvements in Machinery for Mowing and Reaping Grass and Grain, &c.; and I do hereby declare the following to be a full description of the same.

The nature of my invention consists, first, in making the rail of the frame of the machine on the side next to the cutter in two parts, so that the lower part may turn or rotate on a center pin secured into the end of the upper or stationary part of the rail when disconnected from the end of the front rail of the frame, for the purpose of folding back the cutter-bar secured to the outer end of the adjustable part of the side rail.

The second part of my invention consists in combining the cutter-bed and cutter-bar attached thereto with the lower end of the adjustable part of the side rail, so as to unite the cutter-bed and frame of the machine together as one solid fixture, when the adjustable portion of the side rail is locked securely upon the end of the front rail, for the purpose of making what may be called a "rigid cutter-bar," in contradistinction to a "hinged cutter-bar," the object being to cause the cutters to work with less friction as well as less jar upon the frame than is the case with machines having hinged cutter-bars attached to the shoe or end of the frame.

The third part of my invention consists in adjusting the propelling-wheel on the axle of the machine next to the cutters on the inside of the side rail, for the purpose of combining the said wheel with the driving gear-wheel of the machine, and also accommodating the oscillating motion of the frame.

The fourth part of my invention consists in the method of balancing the frame upon a knife-edge shoulder or hub formed upon the axle of the propelling-wheels, so that when surrounded by a suitable box secured upon the middle rail of the frame it prevents the frame from sliding from side to side on the axle, and at the same time permits it to have an oscillating motion.

The fifth part of my invention consists in the combination of the cutter-bar elevator-lever with the table-board immediately behind the driver's seat, so as to make the frame

of the machine act like a lever of the first order, the prop or axle being between the weight and the power, in contradistinction to the application of the third order of the lever commonly used in mowing-machines to lift the cutters from off the ground.

The sixth part of my invention consists in the method of combining an adjustable driver's seat with the table-board of the machine, so as to make a single thin flat plate of steel stiff enough to support the driver, and yet elastic enough to make a spring-seat, and thus cheapen the cost of making a spring-seat.

The seventh part of my invention consists in combining a pole, suspended from the end of the table or bed board of the machine by a sliding joint, with an oscillating mower-frame and drag-chain, for the purpose of allowing the cutter-frame to have the same pressure at all times on the surface of the ground without regard to the elevation or depression of the pole.

The eighth part of my invention consists in the method of taking up and locking the drag-chain by means of a staple passing through the sides of the pole and having on its back end a screw and binding-nut, so that when a link of the chain is passed through the eye of the staple and the nut drawn up it binds upon the flattened portion of the link, and thus holds it solidly and securely, and prevents any slip or "backlash," as is the case when the chain slacks up if held by a hook.

The ninth part of my invention consists in arranging and operating the cutter-bar of a sidewise-oscillating mower-frame, suspended on the axle of a two-wheel mowing-machine, to the front end of the machine, instead of arranging and operating it to the back end of the frame, or on a line, or nearly so, with the propelling-wheel axle.

But to describe my invention more particularly, I will refer to the accompanying drawings, forming a part of this specification, the same letters of reference, wherever they occur, referring to like parts.

Figure 1 is a plan view of the machine. Fig. 2 is a cut section of the same through the line *xx*, Fig. 1. Fig. 3 is a right-hand-side view of the machine. Fig. 4 is a left-hand-side view of the machine, omitting the propelling-wheel. Fig. 5 is a detached section of the front and adjustable side rail of the ma-

chine, showing the cutter-bar thrown back across the front of the machine. Fig. 6 is a detached view of the upper side of the shoe on the end of the adjustable side rail. Fig. 7 is a detached edge view of the shoe. Fig. 8 is a detached view of the lower side of the adjustable pole, showing its connection with the table. Fig. 9 is a detached side view of the same. Fig. 10 is a detached side view of the driver's seat, showing its mode of combination with the table-board. Fig. 11 is a front view of the same. Fig. 12 is a detached cut sectional view of the compound coupling-box. Fig. 13 is a detached side view of the interior of the coupling-box for operating the propelling-wheel at the right-hand of the driver. Fig. 14 is a detached side view of the interior of the coupling-box for operating the propelling-wheel to the left of the driver.

Letter A is the axle, and B' and B² are the propelling-wheels.

B² is arranged on the axle so as to be inside of the frame on the side of the cutter-bar. The object of this is to allow the frame to have an oscillating motion, and also permit a rotating motion in a section of the side rail of the frame to reverse the cutter-bar.

C is the frame, which is made of metal, though it may be made of wood, or wood and metal combined, as thought best. This frame is designed to be self-adjustable. For this purpose a solid knife-edge shoulder or hub, D, is formed on the axle, so as to be about in the middle of the frame, to balance it. Upon this is secured a box, E, which is permanently fixed to the middle rail of the frame, and thus allows the hub D free space to rotate and have sufficient play for a vibratory motion in the frame, yet preventing any slipping of it from side to side on the axle.

To one side of the box E is formed a bearing, d^2 , upon which is adjusted the main driving gear-wheel F. The object of this is to have this wheel as well as all the other gear-wheels, G, H, and I, operating in connection therewith to propel the cutter-bar suspended upon the frame C, so that in its rocking on the knife-edge bearing the several wheels will keep in gear, and thus work smoothly, though subject to a constant rocking or vibratory motion. To prevent the frame from having any sidewise lateral motion, boxes J J are secured on the side rails of the frame over the ends of the axle, so as to permit it to have a sufficient up-and-down motion, but no lateral or sidewise motion.

Letter K is a compound coupling-box adjusted upon the axle A between the propelling-wheel B² and main driving gear-wheel F. The object of this compound coupling-box is to connect both the propelling-wheels B' and B² with the gear F, so that whether the machine is turned to the right or left the cutter will be operated. This is effected by having the wheel B' fixed permanently upon the axle A, while the wheel B² works loosely upon it, so that when the latch L, attached to the upper side

of the coupling-box, is dropped into its seat in the main gear-wheel F the click or pawl M, attached to the inner face of the hub B², acting upon the ratchet on the inner circumference of the coupling-box K, will operate the gear-wheel F for propelling the cutters when making the turn from right to left round the wheel B' as a center of motion.

To operate the gearing for propelling the cutters from left to right round the wheel B², as a center of motion, the pawl M² in the reverse or opposite half of the coupling-box is adjusted upon a disk or plate, m^3 , attached permanently to the axle A, so that as the axle and wheel B', attached thereto, rotate, the pawl M², engaging into the ratchet on the inner circumference of this half of the coupling-box, will operate the gearing-wheels, and thus either propelling-wheel may act independently of the other to permit the machine to be turned to the right or left hand at pleasure. To keep the pawls down upon the ratchets small springs are secured to them for that purpose.

Letter N is the cutter-bar connecting-rod, attached at one end to the rim of a fly-wheel, O, and at the other into an eye formed on the end of the cutter-bar P.

Letter Q is an adjustable shoe secured to the heel of the cutter-bed R by means of two vertical ear-pieces, q^2 , on its back edge, in each of which are two or more holes for the insertion of binding-screws q^3 , secured into studs q^4 , formed on the upper side of the cutter-bed. The object of this method of making the shoe adjustable is to make it so that the shoe will have a forward or backward inclination or pitch, if desired, or adjusted on a plane, and at the same time, in consequence of the ear-pieces being above the bed, allow the shoe to press the ground with elasticity. To the opposite or outer end of the cutter-bed R is secured, by bolts or rivets, a fixed guard-piece, r^2 , so as to form a part of the cutter-bed, and thus at all times preserve a relative position with reference to the endwise motion of the cutters and without regard to the set of the adjustable runner or shoe q^5 , secured to its outer face by binding-screws q^7 , inserted through adjusting-holes in the shoe and ends q^6 of the fixed guard-piece. This adjustable runner or shoe works vertically against the face of the fixed guard-piece, and not under it, and is made with three or more adjusting-holes in each end, so as to permit its being set at pleasure to cut long or short stubble, as may be desired.

The cutter-bed (having the cutter-bar working thereon in suitable guides) is riveted solidly to the ends of a side rail, C², of the frame of the machine. The object of this is to make a rigid cutter-bar—that is, to have no joint in the cutter-bar or cutter-bed at their junction with the shoe for the purpose of elevating them, as is commonly the case in mowing machines, and thus make the cutter-bar vibrate smoothly and evenly through the slits in the fingers to cut the grass, and at the same

time prevent, in a great measure, all noise and jar incidental to the wear of hinged cutter-bars. By my invention the cutter-bed is made to be a solid portion of the frame when the machine is working; but when not in use, and it is requisite to elevate the cutter-bar to pass through gateways or over roads, it may be done by disconnecting the section C^2 of the side rail of the frame at the outside of the propelling-wheel B^2 from the end of the front rail, C^3 , of the frame of the machine. This is done by withdrawing a pin, C^4 , from the eye of a bolt, C^5 , holding both together. This permits the adjustable portion of the rail C^2 (having the cutter-bed attached thereto) to rotate upon the center pin, C^6 , secured to the under side of the adjoining parts of the rail C and C^3 , and holding them from separating, and thus the operation of reversing or elevating the cutter-bar is accomplished with the same facility and without disconnecting the cutter-bar connecting-rod, as in hinged cutter-bars.

Letter S is a metal flooring or table secured upon the upper side of the axle A in suitable bearings for that purpose.

T is the driver's seat, having secured to its front lower edge a thin plate of spring-steel, t^2 , which is inserted into a socket, t^3 , and sliding loop t^4 , secured to a solid metal standard, t^5 , formed upon the flooring or table. The object of this arrangement is to make an adjustable spring-seat for the driver, and at the same time cheapen the cost of the spring, as by my method of combining the spring with the stiffener at the back of it, a less quantity of steel will be required, as well as being more easily made.

Letter U is a cutter-bar elevator-lever adjusted upon the back end of the table or flooring S to the left hand of the driver's seat, so as to operate upon the back end of the frame of the machine, and thus make the frame operate as a lever of the first order to lift the cutter-bar, and at the same time make the weight of the frame behind the axle assist the driver in elevating the front end of it, instead of compelling him to lift the entire weight, as is the case in mowing-machines where the cutter-bar lever is adjusted to work on the front end of the frame.

Letter V is the pole to which the horses are attached. This pole is made to be self-adjustable with reference to the action of the cutters in passing over inequalities in the surface of the ground, but not in the track of the horses. This is effected by making an oblong slot, V^2 , in the front end of the table or flooring, (to which the pole is attached,) so that the king-bolt V^3 , for holding them together, will be able to slide backward and forward in it as the cutter-bar falls into or rises out of the hollows in the surface of the ground, in consequence of the weight and draft of the machine being carried forward by the drag-chain W, secured to the front rail of the frame and the pole. The operation of this is that

the draft of the machine is sustained by the chain. Therefore, if the cutter-bar falls into a hollow, the pole slides back upon the table to compensate for its depression, while in rising out of a hollow the tendency is to draw or slide forward, and thus in either case allow the cutter to follow the surface of the ground, instead of being carried over them, as would be the case if the pole were secured to the frame rigidly.

Letter X is an adjustable staple, having at its back end a screw and binding-nut. The object of this is to hold the drag-chain from slipping or having any backlash when slackening up, as would be the case if a hook were used; and as it is important, in a machine operating on the principle of my invention, to have the relative positions of the cutter-bar, frame, and pole certain and constant, to make the machine work successfully, the method of holding the drag-chain assumes an importance of more significance than would appear at first view; and therefore the necessity of the special device I have invented for that purpose.

Having now described my invention, I will proceed to set forth what I claim and desire to secure by Letters Patent of the United States—

1. Making a section of the side rail of the frame next to the cutter and in front of the axle adjustable by connecting the same to the end of the stationary part of the rail by a center pin, so that when its lower end is disengaged from the end of the front rail of the frame, it may rotate on the center pin, substantially as hereinbefore described, and for the purposes set forth.

2. The combination of the cutter-bed (with the cutter-bar working thereon) with the adjustable section of the side rail, substantially as hereinbefore described, and for the purposes set forth.

3. The combination of the propeller-wheel on the side next to the cutter of a two-wheel mowing-machine with a frame having an oscillating motion transversely of the path of the machine, when the said wheel is arranged on the outside of the side rail of the oscillating frame, substantially as hereinbefore described.

4. The use of the solid or fixed knife-edge bearing or shoulder formation on the propelling-wheel axle as a bearing on which to balance the frame of the machine and prevent it from slipping from side to side thereon, in combination with the said frame and bearing d^2 of the main driving gear-wheel F, substantially as hereinbefore described, and for the purposes set forth.

5. The combination of the cutter-bar elevator-lever with the back end of the flooring or table and frame of the machine behind the axle of the propelling-wheels, substantially as hereinbefore described, and for the purposes set forth.

6. The method of making an adjustable spring driver's seat, in combination with the

fixed or solid standard or spring-stiffener projecting upward from the back edge of the table or flooring, substantially as hereinbefore described, and for the purposes set forth.

7. The combination of the self-adjustable compensating-pole with a frame having an oscillating motion transversely of the path of the machine and drag-chain, arranged and operating as hereinbefore described, and for the purposes set forth.

8. The use of the adjustable staple for locking the drag-chain, in combination with a self-adjustable compensating-pole and drag-chain

attached to an oscillating mower-frame, substantially as hereinbefore described, and for the purposes set forth.

9. The arrangement of the cutter-bar of a mower-frame having an oscillating motion transversely of the path of the machine, and two propelling-wheels, so as to operate forward of the axle of said propelling-wheels, substantially as hereinbefore set forth.

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