

C. M. YOUNG.  
Harvesters.

No. 135,394.

Patented Jan. 28, 1873.

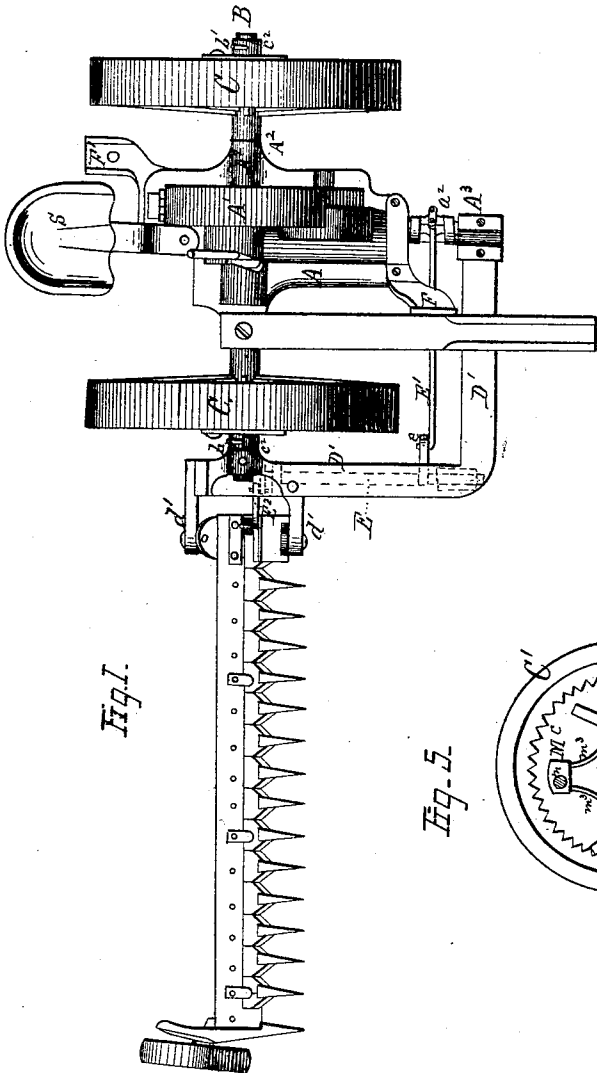


Fig. 1.

Fig. 5.

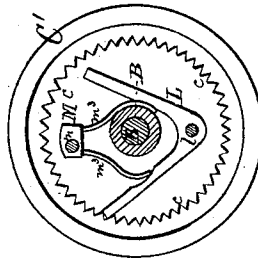
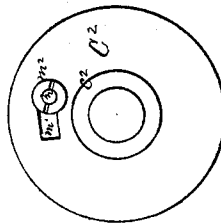


Fig. 6.



Witnesses

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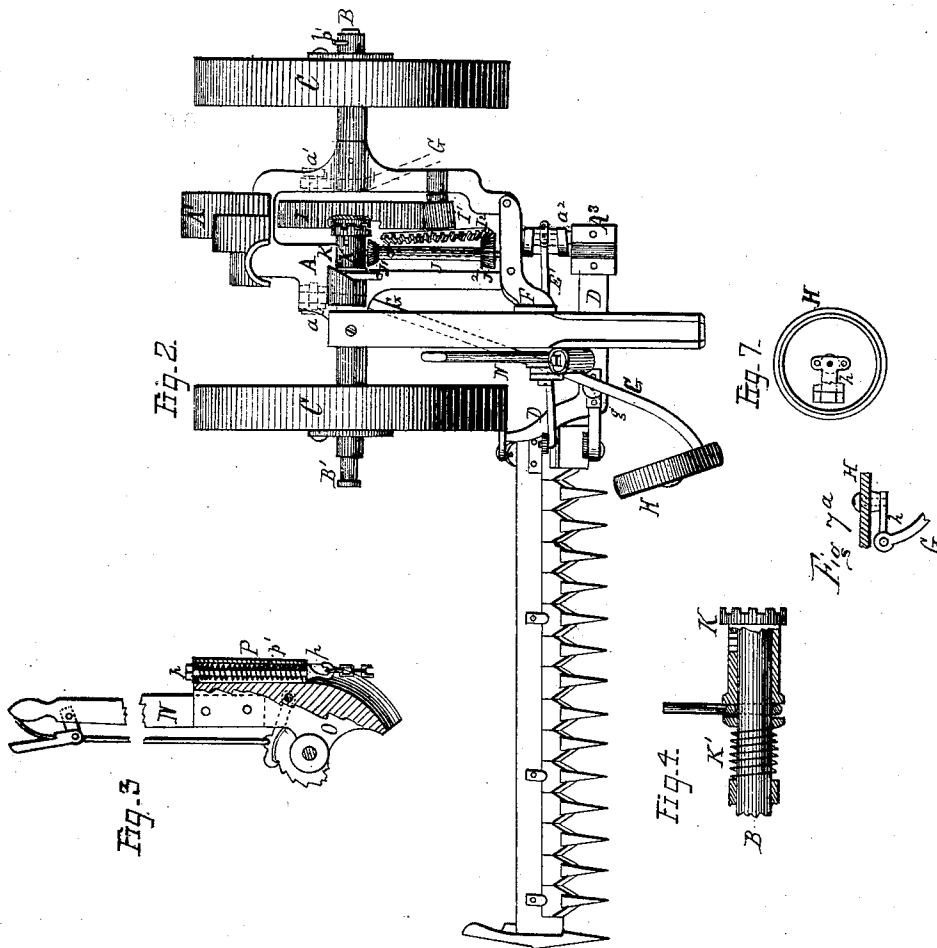
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# UNITED STATES PATENT OFFICE.

CHARLES M. YOUNG, OF MEADVILLE, PENNSYLVANIA.

## IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **135,394**, dated January 28, 1873.

*To all whom it may concern:*

Be it known that I, CHARLES M. YOUNG, of Meadville, county of Crawford, State of Pennsylvania, have invented a new and useful Improvement in Reaping and Mowing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a plan view of my improved machine with the cutting apparatus arranged for reaping with a center cut. Fig. 2 is a similar view with a front-cut arrangement of the cutting apparatus for mowing; and Figs. 3, 4, 5, 6, and 7 represent detached parts of the machine, hereinafter described.

Similar letters of reference denote corresponding parts of the machine wherever used.

My invention relates to a novel construction of the machine, adapting it to be used with a front cut for mowing, and with either a center or rear cut for reaping; to the arrangement of the gearing for changing the speed of the cutters; to a novel means for relieving the drag of the cutting apparatus upon the ground in mowing; to the manner of combining the diagonal brace with the inner leading carrying-wheel; to the construction of the reversible clutches for changing the direction of movement of the machine; and to certain details of construction and arrangement, all of which will be understood from the following description with reference to the drawing, in which—

A represents the main box-metal frame, made to incase the gearing, and provided with a hinged cap or cover, A<sup>1</sup>, through which access is afforded to the gearing, and also with sleeves or bearings A<sup>2</sup> to receive the axle B, mounted on two independent driving-wheels, C C. The frame A is provided at each end with a tongue plate or socket, connected therewith by bolts or screws, which permit either to be removed or applied, as required, to adapt the machine to either a rear or front cut. A<sup>3</sup> is a forward arm-extension of the frame, made angular or recessed at a<sup>2</sup>, to permit the rotation of the crank, and affording a support or bearing to the crank-shaft forward of the crank, thereby relieving said shaft of the strain consequent upon having a bearing on one side of the crank only. The arm or extension A<sup>3</sup> also permits the hinged coupling-arm

D or D' to be connected with the frame at a point in advance of the pitman and cutting apparatus when the machine is used as a front or center cut, and in rear of the same when used as a rear-cut machine. The axle B is provided at its inner end, or on the right-hand side of the machine, with a removable extension piece, B', for receiving and supporting the rear end of the coupling-frame D' when the center cut is used, as shown in Fig. 1, the extension piece B' being tenoned in the end of the axle B, and fastened thereto by a set-screw or pin, b, or in any other convenient manner. Under this arrangement, the cutting apparatus being brought into the same or nearly the same vertical plane with the axle, and in line with the tread of the wheels, but a single joint is required to enable the cutting apparatus to follow the surface of the ground at both ends, and this is located at the point of connection of the shoe with the pendent arms or lugs d' d' of the coupling-frame D', as shown in Fig. 1. In this construction, to adapt the cutters to be driven without change of pitman, the frame D has applied to it, on its under side, a rock-shaft, E, shown in dotted lines, Fig. 1, the forward end of which has an arm, e, to which the outer end of the pitman E<sup>1</sup> is connected; a similar arm at the rear end of the rock-shaft being connected, through a rod, E<sup>2</sup>, with the sickle-bar, for operating the same. The frame A has pole-sockets F F' bolted to it in front and rear, either or both of which may be made removable, so that they can be taken off when not in use. Sufficient elevation is given to the forward one, F, to allow the required freedom of movement of the coupling-arm D underneath the same to give the desired adjustment of the cutting apparatus. Said tongue-socket plate may be made also to serve as a cap or shield to the forward pinion on the crank-shaft. When the machine is to be used with a front or rear cut the arm D having a single pivotal connection with the frame A at a point, A<sup>3</sup>, as above explained, is used, and an oblique brace, G, connected at g to the coupling-arm D by a ball-and-socket or other form of universal joint, and at its rear end with the rear end of the frame by a horizontal pivot-joint, a, is employed to properly support or brace said arm D. The horizontal pivotal connection a of the brace G

with the frame serves to direct the vertical movement of the brace, while the ball-and-socket joint permits the varying angle of the rotation of the arm D thereto as the latter is adjusted in the arc of a circle. The brace G extends forward of the arm D, and has a carrying-wheel, H, adjustably connected with its forward lower end, as represented in Figs. 2 and 7<sup>a</sup>. In changing the machine to a rear cut for reaping, the forward pivoted end of the brace is disconnected from the frame, the cutting apparatus removed, and a coupling-arm and brace similar to the arm D, with its brace G, attached to the frame on the opposite side, and the end of said brace connected at *a*<sup>1</sup> by a horizontal pivot to the opposite side of the frame, the tongue transferred from socket F to F', the backing-ratchets reversed, as will be explained, and the reaper cutting apparatus applied, and the machine will be ready for use as a rear-cut reaper. The axle of the carrying-wheel H is adjustably connected to the rear end of a swiveling-plate, *h*, the forward end of said plate being connected by a vertical or nearly vertical pivot with the forward end of brace G in such manner as to allow a limited vibration of the plate *h* and wheel H relative to the brace, such as will accommodate the changing direction of movement of the machine, as shown in Fig. 2. When the machine is used for reaping this wheel is disconnected from brace G and applied to the outer end of the cutting apparatus, as shown in Fig. 1.

The arrangement of the gearing is as follows: I is a large spur-gear arranged centrally of the axle, mounted loosely thereon, and connected therewith for driving the cutters, when in operation, by a sliding clutch, K, held in mesh with a clutch-face on the wheel I by a spring, K', surrounding the axle. (See Fig. 4.) I<sup>1</sup> is a pinion, made slightly beveled or tapering in form, and mounted upon a stud-shaft which is set a little obliquely to or out of line parallel with the axle B. I<sup>2</sup> is a bevel-wheel connected to and rotating with pinion I<sup>1</sup>, said wheel, by the arrangement of its shaft, as explained, being thrown slightly out of a line at right angles to the axle, and the crank-shaft, which is placed in a line at right angles or thereabout to said axle, consequently passes the face of the bevel-wheel in a line out of parallel therewith. The crank-shaft has mounted upon it a sliding sleeve, J, armed at each end with a bevel-pin, J<sup>1</sup> J<sup>2</sup>, of different diameters, having each a radius corresponding to the distance of the center of the crank-shaft from the face of the bevel-wheel at points on said shaft where said pinions are located when engaging with the bevel-wheel. The rear or smaller pinion is adapted to give the rapid rotation of the crank-shaft for mowing, and the forward or larger pinion J<sup>2</sup> the slower motion, suitable for reaping. The sleeve slides endwise on its shaft for throwing either of said pinions into or out of gear, and may be feathered to the shaft and fastened at the required point of adjustment

by a set-screw or other equivalent device for the purpose. The construction of the reversible backing-ratchets and cap-piece is shown in Figs. 5 and 6. The inner face of the enlarged hub C' of the driving-wheels C has a circle of ratchet or saw teeth, *c*, formed upon it, the opposite sides or faces of said teeth having the same or nearly the same angle of relation to the face of the hub on which they are formed. Said teeth are inclosed or covered, when in operation, by a cap, C<sup>2</sup>, fitting within the recessed face of the hub and secured in place by pins *b b'* passing through the hub *c*<sup>2</sup> of the cap and through the axle B. L is a double or V-shaped pawl, pivoted at *l* to the cap-plate C<sup>2</sup> upon one side of the axle, the extended arms of which embrace the axle between them, and are adapted to engage one or the other alternately with the ratchet-teeth *c*. M is a sliding block or head-piece provided with a screw-threaded shank, *m*, which extends through a slot, *m*<sup>1</sup>, in the cap-plate C<sup>2</sup>, and is secured on the outer face of said cap by a thumb-nut, *m*<sup>2</sup>, which permits the adjustment of the block M. *m*<sup>3</sup> is flat, slightly-curved springs, attached to block M on its inner face, and extending on opposite sides of the axle until they rest and bear against the opposing arms of the double pawl L. By adjusting the block M in the slot *m*<sup>1</sup>, as explained, either of the springs may be made to cause that arm of the double pawl against which it bears to engage with the ratchet *c*, and the other arm to be withdrawn therefrom, as desired, for changing the direction of rotation of the driving-wheels in changing from a rear to a front or center cut machine, and vice versa; or, by securing the block M midway in slot *m*<sup>1</sup>, both arms of the pawl may be disengaged for transportation. The device for relieving the drag of the cutting apparatus on the ground in mowing is shown in section, Fig. 3. The lifting-lever N and segment O may be of any usual or desired form and construction, and, provided with the usual thumb-latch or lever and pawl, as shown, for holding the same as desired, are mounted upon the forward end of the main frame, or upon the tongue-plate or socket-piece in convenient position (shown in Fig. 2) to be operated by the driver in his seat, S. The lever-segment O, at the upper end of its chain-groove, has attached to or cast with it a tubular socket, P, inclosing a sliding bolt, *p*, surrounded and upheld by a spiral spring, *p'*, and provided at its lower end, which projects through a perforation in the bottom of socket P, with a hook or eye, to which the upper end of the lifting chain or cord is connected, the lower end of said chain being connected with the hinged coupling-arm D or cutting apparatus, in the usual manner. When the cutting apparatus is let down upon the ground for mowing, its pressure thereon may be adjusted or regulated by the adjustment of the lifting-lever, so as to throw a part of its weight upon the spring *p'* in such manner that the cutting

apparatus will follow lightly and easily the surface of the ground, greatly diminishing its drag and the power required to draw the machine, in a manner that will be readily understood.

Parts of the machine not particularly described may be of any usual or desired form or construction.

Having now described my improvements in such manner as will enable others skilled in the art to make and apply them to use, what I claim as new, and desire to secure by Letters Patent, is—

1. The main frame provided with its points of attachment  $A^3$   $a'$  for the reversible coupling and brace arms D G, in combination with the extension-axle B' as a point of attachment for the coupling-arm D', and the interchangeable tongue-sockets F F', as described, whereby the machine is adapted to be used with a front cut in mowing, and with either a center or rear cut for reaping, as described.

2. The combination of the rock-shaft E with the removable coupling-arm D', for adapting the sickle to be operated in a center cut by the same gearing and connecting-rod or pitman by which it is operated in a front or rear cut, as described.

3. The combination of the swiveled leading-wheel H with the forward extended end of the pivoted brace G, substantially as described.

4. The combination of the two bevel-pinions  $J^1$   $J^2$  of different diameters on the crank-shaft with a bevel driving-wheel, the face of which is set obliquely to the line of said crank-shaft crossing the same, substantially as and for the purpose set forth.

5. The double or reversible V-shaped pawls L and adjusting-block M and springs, in combination with the recessed hubs of the driving-wheels and the reversible tongue for reversing the direction of rotation of the driving-wheels, as described.

6. The lifting segment and lever provided with the sliding yielding bolt and spring, and connected with the coupling-arm, substantially as described, for relieving the drag of the cutting apparatus on the ground when the lifting-lever is locked.

In testimony whereof I have hereunto set my hand this 8th day of November, A. D. 1872.

CHARLES M. YOUNG.

Witnesses:

D. G. SHRYOCK,  
J. D. GILL.