2 Sheets—Sheet 1.

J. F. APPLEBY.

HARVESTERS.

No. 185,620. Patented Dec. 26, 1876.

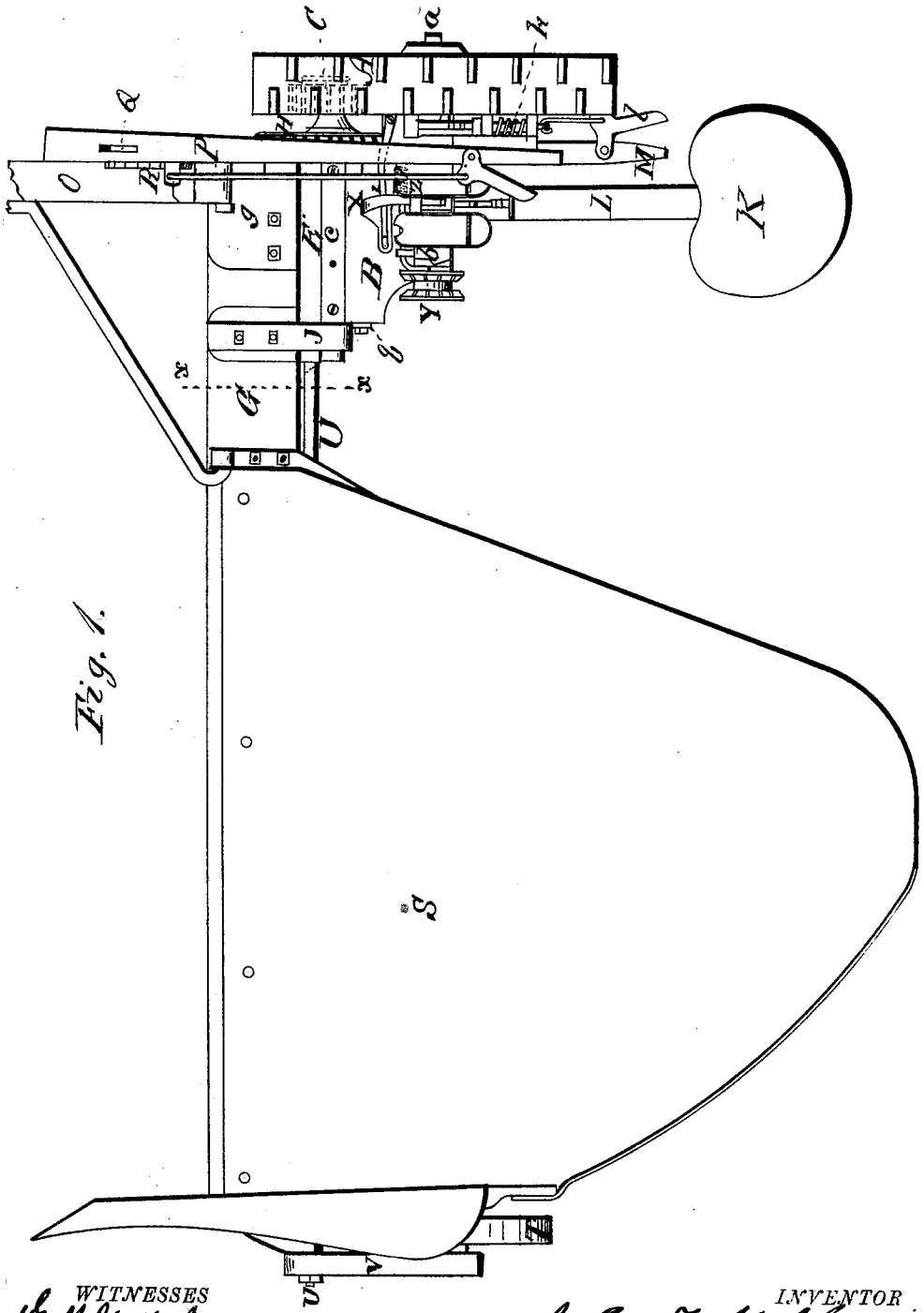

Fig. 1.

WITNESSES

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Charles Van DeMark

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INVENTOR

John F. Appleby,

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his Attorney.

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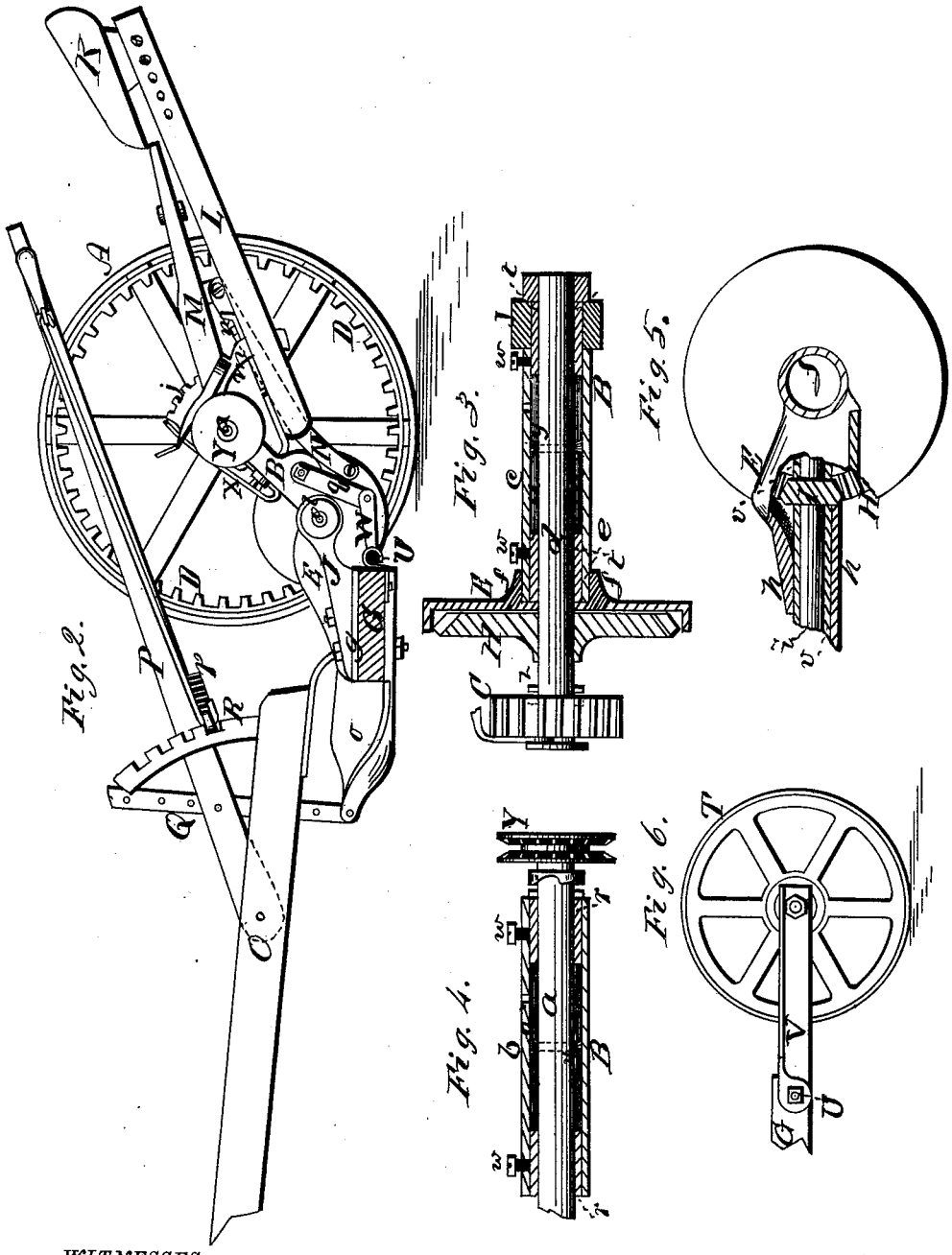

WITNESSES

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INVENTOR,

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UNITED STATES PATENT OFFICE.

JOHN F. APPLEBY, OF MAZO MANIE, WISCONSIN, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO EDWIN D. BISHOP, OF SAME PLACE.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **185,620**, dated December 26, 1876; application filed May 1, 1875.

To all whom it may concern:

Be it known that I, JOHN F. APPLEBY, of Mazo Manie, in the county of Dane and State of Wisconsin, have invented an Improved Mowing-Machine; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a top view of a mowing-machine provided with my improvements; Fig. 2, a side elevation of the principal parts of the machine, taken in a plane indicated by the line *x x*, Fig. 1; Figs. 3, 4, 5, and 6, views in detail of various parts thereof.

Like letters designate corresponding parts in all of the figures.

My invention consists in several features of improvement based upon a mowing-machine organized with a single driving and supporting wheel, as hereinafter specified in order; but most of the improvements are also applicable to two-wheel machines.

From the center of the driving-wheel A projects a shaft or axle, *a*, on which is pivoted and supported a broad casting, B, that forms the main frame or body, whereon the principal operative parts of the machine are mounted, or by which supported. The bearing-socket *b*, which turns on the driving-wheel shaft *a*, is at the rear end of this frame-casting, and at its front end it has another socket-bearing, *c*, in which revolves, and which pivots around, the shaft *d* of the driving-pinion, C, that gears into a cog-gear, D, on the inside of the rim of the driving-wheel A. Also, at the end of the socket *c*, next to the driving-wheel, the frame casting B has a round projection, *e*, that forms a pivot-journal, to turn in a bearing, *f*, of another casting, E, which is firmly attached to the finger-bar G of the machine, by bolts passed through a side flange, *g*, of the said casting, and through the finger-bar. This fixed casting has a bearing-socket, *h*, which extends forward at right angles to the bearing-socket *c* of the frame-casting B, and in which turns the crank-shaft *i*, that drives the cutter-bar of the machine. This casting E also houses and shields the bevel driving-wheel H on the shaft *d* of the driving-pinion C and the bevel-pinion I on the said crank-shaft, and gearing into the said bevel driving-wheel, whereby the shaft receives its revolving motion. The frame-casting B, being pivoted at both ends, forms a free-link connection between the axes of the driving-wheel A, the central line of support, and the casting E, that bears the finger-bar G with it. It thus allows the said casting E, finger-bar G, and parts directly connected therewith, to freely rise and lower; and the driving-pinion C, having its shaft parallel with the shaft of the driving-wheel A, and moving with the front end of the frame-casting concentric around the same shaft *a*, always remains in perfect gear with the cog-gear D, however much the casting E and finger-bar G may rise and lower. And the breadth of the frame-casting, with its long bearing on the axes of the driving-wheel, affords the requisite lateral strength, rigidity to resist the side strain thereon by the draft, and fully protects the pinion-shaft *d* from bending or breaking, and the pinion itself from binding. The inner front corner of the frame-casting is pivoted (in axial line with its pivoting in the casting E) in a bracket-bearing, J, secured to the finger-bar. The driver's seat K is attached to a rearward-projecting support, L, the front end of which is attached to the under side of the frame-casting B, and the weight of the driver thereon, behind the main shaft or axle, partially counterbalances the weight of the castings B E, the finger-bar G, and other parts supported by the castings forward of the main shaft. Consequently the adjustment of these parts up and down requires comparatively little exertion of strength by the driver.

The means of raising and lowering these parts, to secure the finger-bar at the right height, consists in a lever, M, pivoted to the frame-casting B concentric with the main shaft *a*, and extending backward therefrom to a position within reach of the driver, and of a bar or rod, N, extending from the said lever to the under side of the casting E, to which, as well as to the lever, its two ends are respectively jointed or pivoted. The lever M is adjustable up and down around its pivot or fulcrum, and is held at different heights by a

concentric ratchet-bar, *j*, and a spring-fastening catch or detent, *k*, connected by a rod with a disengaging-handle, *l*, near the end of the lever, so as to be conveniently operated by the driver as he holds the end of the lever. The connecting bar or rod N is jointed to the casting E, back of the pivot-connection thereof with the frame-casting B, so that, as the lever M is raised, since the said joint-connection, by the bar N, between the casting E and lever M remains constantly equidistant, the casting must rise as the lever rises, and vice versa. Hence the locking of the lever M at any height retains the casting E and the finger-bar G with it at a corresponding height, as desired.

The driver's seat K, when the adjustment of the frame-work and finger-bar up and down is extreme, may be required to be counter-adjusted, since the seat descends when the frame-work and finger-bar rise, and vice versa, as the seat should never vary much from a uniform height. To secure a compensating adjustment of the seat, the seat-support L is jointed at its forward end to the under side of the frame-casting B forward of the main shaft *a*, and farther back the support is sustained by a ratchet-bar, *m*, which is suspended from the rear end of the frame-casting, and a spring-detent, *n*, engages with the ratchet-bar and holds in one of its several notches. The driver can raise the support without withdrawing the detent by hand. In lowering the support he draws upon the detent and disengages it from the ratchet-bar, and then lowers the support to the point required. The seat itself is also adjustable longitudinally upon its support to vary the counterbalancing leverage thereof upon the frame-work, and the position of the driver in respect to the machine. This adjustment may be effected by means of a set of holes in the support, through which pins or bolts pass, and through the embracing socket of the seat; or any other suitable means may be employed.

In raising and lowering the frame-work and finger-bar the forward end of the tongue O is supposed to remain at nearly the same height. Its tongue may be adjusted in relation to the finger-bar, to which it is jointed, or to the flange *g* of the casting E, for keeping the finger-bar and its platform (if for a reaper) in a horizontal position at all heights, by means of a lever, P, whose fulcrum-support Q is secured upon the shoe *o* of the machine attached to the finger-bar, while its forward end is jointed to the tongue forward of the said support, and behind the support it is held at different heights by a ratchet-bar, R, projecting upward from the tongue, and a spring-detent, *p*, holding into one of the notches of the said ratchet-bar.

The outer end of the finger-bar G and the platform S, if the machine is for a reaper, is supported by the grain or grass wheel T, and is raised and lowered equally and simultaneously with the inner end of the finger-bar by means of a rod or shaft, U, extending along the rear edge of the finger-bar, and having an axial turning or rocking movement in its bearings. It has two arms, V and W, secured at right angles thereto at its two ends, the outer arm V at its rear free end being pivoted around the axis of the wheel T, while the inner arm W is connected by a rod, *q*, with the frame-casting B, pivoted to said casting at a point back of the axis of its pivot-connection with the casting E and bracket-bearing. This arrangement of the rock-shaft U, and its connection with the grain or grass wheel T, and with the frame-casting B, are such that as the said casting is raised to raise the inner end of the finger-bar, the connecting-rod *q* and arm W are depressed, whereby the rock-shaft U is turned somewhat on its axis, and tends to depress the rear end of the arm V; but since the said rear end of the arm is supported by the wheel T, the necessary effect is to lift the forward end of the arm, and consequently to raise the outer end of the finger-bar. The lengths of the arms V and W are such, and so proportioned, that this lifting of the outer end of the finger-bar is equal to that of the inner end thereof.

The bearing-socket *b* at the rear end of the frame-casting B is cast hollow, and requires no finishing inside. In this socket-bearing boxes *r r* are inserted at the two ends thereof, in which the main shaft turns. These boxes fit tight in the socket, and the unoccupied space *s* between them is employed as an oil-chamber, the oil being admitted therein through an aperture above. The bearing-socket *c* is made in the same way, receiving bearing-boxes *t t*, with an oil-chamber, *u*, between them. Also, the bearing-socket *h* of the shield-casting E is similarly constructed, the bearing-boxes *v v* extending from the ends thereof into the bevel-pinion I. One of these boxes *v v* is inserted at the forward end of the socket, and the other bearing through the pivot-hole *f* in the casting. All of these bearing-boxes are held and adjusted in their sockets by set-screws *w w*.

In the oil-chambers *s* and *u*, respectively, are small brushes *y y*, secured to the revolving shafts *a d*, for agitating the oil in the chambers, and bringing it up so as to flow down upon and along the shafts, thereby thoroughly lubricating the journals thereof. The driving-pinion C is coupled to the shaft *d* by a clutch, *z*, which is operated for coupling and uncoupling by means of a connecting-rod, connecting the clutch with an adjusting-lever, X, pivoted on the frame-casting B. The same lever is connecting-rod with the clutch of a sheave-wheel, Y, on the outer end of the driving-shaft *a*, for turning the reel and rake shaft when the machine is arranged for a reaper. Thus, by moving the lever X, both the driving-pinion C, which operates the cutter-bar, and the sheave-wheel Y, which drives the reel and rake of a reaper, are coupled and uncoupled simultaneously on their respective

shafts, and the whole operative mechanism of the machine stops and starts at the same moment. The connecting-rod of the sheave-wheel clutch has a spring, Z, on the end that projects inward through, or by, the lever X, which holds the said clutch by a spring action. And the said clutch being a ratchet-clutch, engaging as the machine moves forward and disengaging as the machine moves backward, the reel's motion is instantly stopped as the machine moves backward, and starts again when the machine begins to move forward. But this self-clutching and unclutching of the reel and rake driving sheave does not extend to the control of the clutch of the pinion C, which is unclutched by the positive movement of the lever X. Thus, when the machine moves backward the cutter-bar continues to operate, and clears itself from the grass and grain.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The frame-casting B, mounted and pivoted upon a projecting shaft, *a*, of the driving-wheel A, of a single-wheel mowing-machine, substantially as and for the purpose herein specified.

2. The combination of the frame-casting B, and shield-casting E, pivoted together on an axis in line with the center of the driving-pinion C, and operating to raise and lower the finger-bar G, substantially as herein specified.

3. The combination of the castings B and E, raising and lowering lever M, and connecting bar or rod N, substantially as and for the purpose herein specified.

4. The combination, substantially as described, of the frame-casting B, the counterbalancing driver's seat K, and seat-support L, the said support having an adjustable attachment to the said casting, and the seat being adjustable on its support, as and for the purpose herein specified.

5. In combination with the castings B and E, the tongue O, tilting-lever P, fulcrum-support Q, and ratchet-bar R, arranged and operating substantially as and for the purpose herein specified.

6. In combination with the frame-casting B, operating to raise and lower the inner end of the finger-bar, and with the grain or grass wheel T, the rock-shaft U, provided with arms V W, and connecting with the said casting by a connecting-rod, *q*, substantially as and for the purpose herein specified.

7. The shipping-lever X, arranged in combination with the pinion C, and sheave-wheel Y, for coupling and uncoupling the same on their shafts, substantially as herein specified.

Specification signed by me this 12th day of April, 1875.

JOHN F. APPLEBY.

Witnesses:

EDGAR S. GREENE,

J. B. DOW.