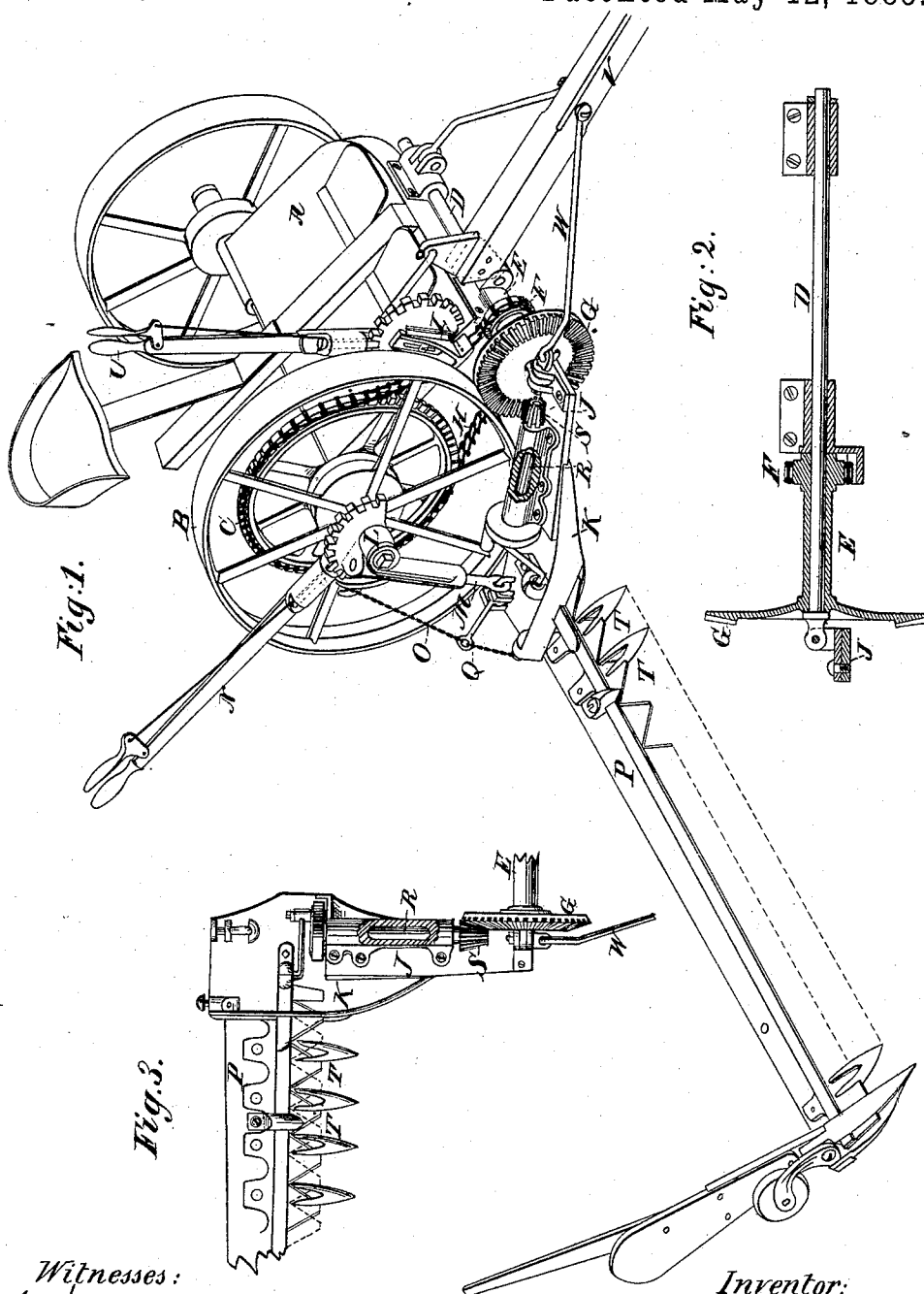


(No Model.)

J. P. MANNY.
HARVESTER.

No. 317,815.

Patented May 12, 1885.



Witnesses:
W. F. Newbury
R. D. Gaylord

Inventor:
John P. Manny
by *Saul A. Duncan*
Atty.

UNITED STATES PATENT OFFICE.

JOHN P. MANNY, OF ROCKFORD, ILLINOIS.

HARVESTER.

SPECIFICATION forming part of Letters Patent No. 317,815, dated May 12, 1885.

Application filed April 28, 1882. (No model.) Patented in Canada July 2, 1883, No. 17,144.

To all whom it may concern:

Be it known that I, JOHN P. MANNY, of Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Mowing-Machines, of one division of which the following is a full, clear, and exact description.

That division of the invention to which the present division relates consists of an improved mode of connecting the cutting apparatus with the main frame, and of lifting the cutting apparatus to pass obstructions or of raising its heel for backing.

In the drawings, Figure 1 is a perspective view of a mower embodying the invention. Fig. 2 is a detail view of the counter-shaft or secondary axle, and Fig. 3 is a detail view of the drag-bar and shoe.

Referring to the drawings more in detail, A is the main frame, B the main driving-wheel, and C a rag, chain, or sprocket wheel turning on the main axle and coupled with the main driving-wheel B by means of an ordinary backing-ratchet. If preferred, this sprocket-wheel may be keyed fast on the axle and backing-ratchets used with both of the main wheels, the axle turning in boxes on the main frame.

D is a counter-shaft or secondary axle, secured in boxes on the front of the main frame and in advance of the main wheels. Mounted on this secondary axle and turning freely thereon is a sleeve, E, which carries a small chain-wheel, F, at one end and a bevel-gear, G, at its other end. The arrangement of the wheel F and the gear G relatively to the driving-wheel on the side of the cutting apparatus is such that they lie upon opposite sides of the plane of that wheel, the bevel-gear G projecting beyond the driving-wheel toward the grass. A chain, H, passing over the wheels C and F, conveys motion to the sleeve E and gear G. If found necessary, a chain-tightener may be used. For this purpose an ordinary floating roller may be employed; or, if preferred, a device like that shown at I, which consists of a shoe held at any desired vertical adjustment by means of a set-screw, which enters a fixed post or standard on the main frame.

The cutting apparatus is connected with

the main frame in the following manner: The drag-bar J and the shoe K being rigidly connected together, the forward end of the drag-bar is pivoted to the projecting end of the secondary axle D, while the shoe, which is firmly bolted to the heel of the finger-beam, is connected with the main axle by means of an oscillating sleeve, L, provided with a pendent tubular arm and a rod, M, arranged to play in such arm. In order to furnish a bearing for this sleeve the main axle is prolonged beyond the driving-wheel on the side toward the cutters, and in order to secure free play of the rod M in the pendent arm this rod must be attached to the shoe by some form of flexible joint, that shown in the drawings being a staple passing through an eye in the lower end of the rod. By giving the arm of sleeve L a sufficient length, and giving the sleeve itself a sufficiently extended bearing on the projecting axle, it will resist the tendency of the heel of the cutting apparatus to crowd in toward the driving-wheel.

As the secondary axle D, to which the forward end of the drag-bar is pivoted, is free to rock in its bearings, it is plain that the heel of the cutting apparatus will be free to rise and fall, for the purpose of passing obstructions, to the full extent of the play of the rod M in the arm of the oscillating sleeve L. So, also, if the secondary axle were fixed in its bearings, the drag-bar might be so pivoted to its outer end that the heel of the cutting apparatus would still be capable of rising and falling freely.

It is manifest that, instead of making the shoe and drag-bar of separate pieces, and then bolting them together, as shown in the drawings, a single piece may be used—or, in other words, the shoe itself may be extended from the finger-beam up to the hinge at the end of the secondary shaft or axle D.

It will be seen that the pendent sleeve L, together with the rod M, that plays therein, and the drag-bar J constitute the coupling-frame, by means of which the finger-beam and cutters are connected with the main frame, and that the flexibility of the connections is such that the finger-beam is what is known in the art as a "floating finger-beam," being capable

of rising and falling automatically in accordance with the varying undulations of the ground. The cutting apparatus is lifted, for the purpose of passing obstructions or backing, by means of an ordinary spring-and-pawl lifting-lever, N, pivoted on the main axle just outside the driving-wheel, and a cord or chain, O, which extends down and connects with the finger-beam P at a point outside of or beyond the lower end of the tubular arm of sleeve L; but, instead of connecting directly with the finger-beam, this lifting-chain, preferably, is connected with a standard or lug rising therefrom and at a point somewhat above the plane of the beam, as shown in the drawings. This increases the leverage of the lifting-lever on the outer end of the finger-beam, so that it can be raised more easily.

Loosely pivoted to the heel of the shoe is a rigid link, Q, which extends upwardly in an inclined direction to a point nearly above the point at which the lower end of the chain O connects with the cutting apparatus, and at this point the link is connected with the lifting-chain. This serves to give the raising-lever at first a more direct lift upon the finger-beam and cutters than otherwise it would have, and at the same time it in no wise interferes with the folding up of the cutting apparatus when this is required for transportation. The lower end of the tubular arm of sleeve L serves as a stop to limit the vertical movement of the heel of the cutting apparatus under the action of the lifting-lever. The first action of the lifting-lever, when it is forced forward by the driver, is to raise the heel of the cutting apparatus until its upward movement is arrested by striking against this stop; then the outer end of the finger-beam begins to rise, and may be lifted to any desired elevation. The crank-shaft R is arranged in a box or suitable bearings on the drag-bar and shoe, and substantially in the line of the double-hinge connection between the cutting apparatus and the main frame. One end of the crank-shaft carries a small bevel-pinion, S, which meshes with the bevel-gear G on the secondary axle D, while the other end is provided with a disk carrying the ordinary crank-pin, which is connected with the heel of the cutter-bar by a pitman in the usual way. By thus arranging the crank-shaft on the drag-bar and shoe and in the line of the two hinges, between the cutting apparatus and the main frame, it follows that the finger-beam can be raised either partially or to the full extent without throwing the gear G and the pinion S out of mesh or causing them to bind, and the cutters will operate equally well on rough ground and on smooth. There are various other advantages connected with this location of the crank-shaft on the drag-bar and shoe; but as this position of the crank-shaft does not form the subject of the present division of my original application as filed April 28, 1882, (but is made the subject of Division B, taken out from said original application by amend-

ment made contemporaneously herewith on this 22d day of October, 1884,) it is deemed unnecessary to state them more fully.

When the crank-shaft is mounted in the manner shown, on the the drag-bar and shoe, these parts being arranged outside the driving wheel on the side next the grass, it will be found desirable to make the shoe as narrow as possible. This necessitates a short pitman, and this, again, a short crank. It will be found desirable, therefore, with such a machine as is shown in the drawings, to use what I have heretofore denominated the "short stroke," which is fully described by me in Letters Patent No. 158,177, granted me December 29, 1874; but, as the combination of the short-stroke mechanism with the crank-shaft arranged on the drag-bar and shoe forms no part of the invention which I seek to patent in this division, (being especially included in Division B,) it is deemed unnecessary to describe the parts more fully.

As shown in the drawings, (although this is no part of the invention which it is here sought to patent,) the machine is provide with a tilting lever for changing the angle of the cutters. Such lever is shown at U. By means of a pawl which engages with a ratchet on the main frame, and of a rod which connects with a standard on the hinged pole or draft frame V, the angle of the cutters can be changed at pleasure. By thus placing the tilting mechanism and hinge forward or in advance of the finger-beam, it becomes possible to bolt the finger-beam, the shoe, and the drag-bar together into one rigid system, and still retain the requisite flexibility whereby to present the cutters to their work at different angles, as may from time to time be required.

W is a brace extending from the pole to the end of the secondary shaft or axle. This brace furnishes a much needed support for such shaft against the strain that otherwise would be communicated to it from the cutting apparatus.

As above described, the secondary axle D is arranged to rock in its bearings, while the sleeve which carries the chain-wheel F and the bevel-gear G revolves on this axle. It is plain, however, that the axle might be made to revolve, the chain-wheel and bevel gear-wheel being keyed upon it; or the chain-wheel and bevel-gear being mounted on a sleeve, as shown, this axle, instead of rocking in its bearings, might be fixed; but in case of either of these changes in construction, it would be necessary to make such modification in the form of the hinge between the drag-bar and the secondary axle as to permit the heel of the finger-bar to rise and fall with freedom. The devices for this purpose are too obvious to a person skilled in the art to need special description.

As hereinbefore indicated, it is not intended to claim herein the tilting mechanism for changing the angle of the cutters, nor is it intended to claim in the present application the

improved arrangement and combination of devices whereby the power is transmitted from the driving-wheel to the cutters, nor the use of the short stroke in combination with the crank-shaft arranged on a drag-bar outside of the driving-wheel, as these features form the subject of Division B of my original aforesaid application.

What is claimed as new is—

10 1. The combination, in a mowing-machine, of the main axle projecting beyond the driving-wheel in the direction of the cutters, a rocking sleeve mounted on such extension of the axle and provided with a pendent tubular arm, and a connecting rod loosely pivoted to the heel of the cutting apparatus and having free vertical play in such tubular arm, substantially as and for the purpose described.

20 2. The combination, in a mowing-machine, of a drag-bar or its equivalent, pivoted at its forward end to a support connected to the main frame, and a rod pivoted upon the heel of the cutting apparatus and supported by an oscillating tubular arm mounted on the main axle, whereby the cutting apparatus is made free to vibrate about the pivot at the forward end of the drag-bar, substantially as described.

30 3. The combination, in a mowing-machine, of a sleeve mounted on the main axle and provided with a pendent tubular arm, the lower end of which acts as a stop to limit the upward range of movement of the heel of the finger-beam.

4. The combination, in a mowing-machine, of a stop connected with the projecting end of the main axle for limiting the vertical movement of the heel of the finger-beam, and a raising chain or cord attached to the finger-beam at a point beyond such stop, substantially as and for the purpose described.

5. The combination, in a mowing-machine, of a stop connected with the main frame or axle to limit the vertical movement of the heel of the finger-beam, a raising-lever mounted on said axle, and a raising chain or cord attached to a standard on the finger-beam at some point above the plane of such beam, said lever being thereby made capable not only of raising the heel of the finger-beam to pass obstructions, but also of lifting the outer end of the beam when the heel has struck the stop.

6. The combination, in a mowing-machine, of a lifting chain or cord attached at its lower end to the cutting apparatus, and a rigid link or brace loosely hinged on the heel of the cutting apparatus and attached at its upper end to such lifting-chain, whereby the lifting-lever is caused to act more directly on the finger-beam without impairing the flexibility of the connection between the cutting apparatus and the main frame.

JOHN P. MANNY.

Witnesses:

LEWIS A. WEYBURN,
WILLIAM C. BLINN.