Sheet 1.
2 Sheets.

O. Redmond

Mower.

No. 53872 Patented Apr 10, 1866.

Fig. 1.

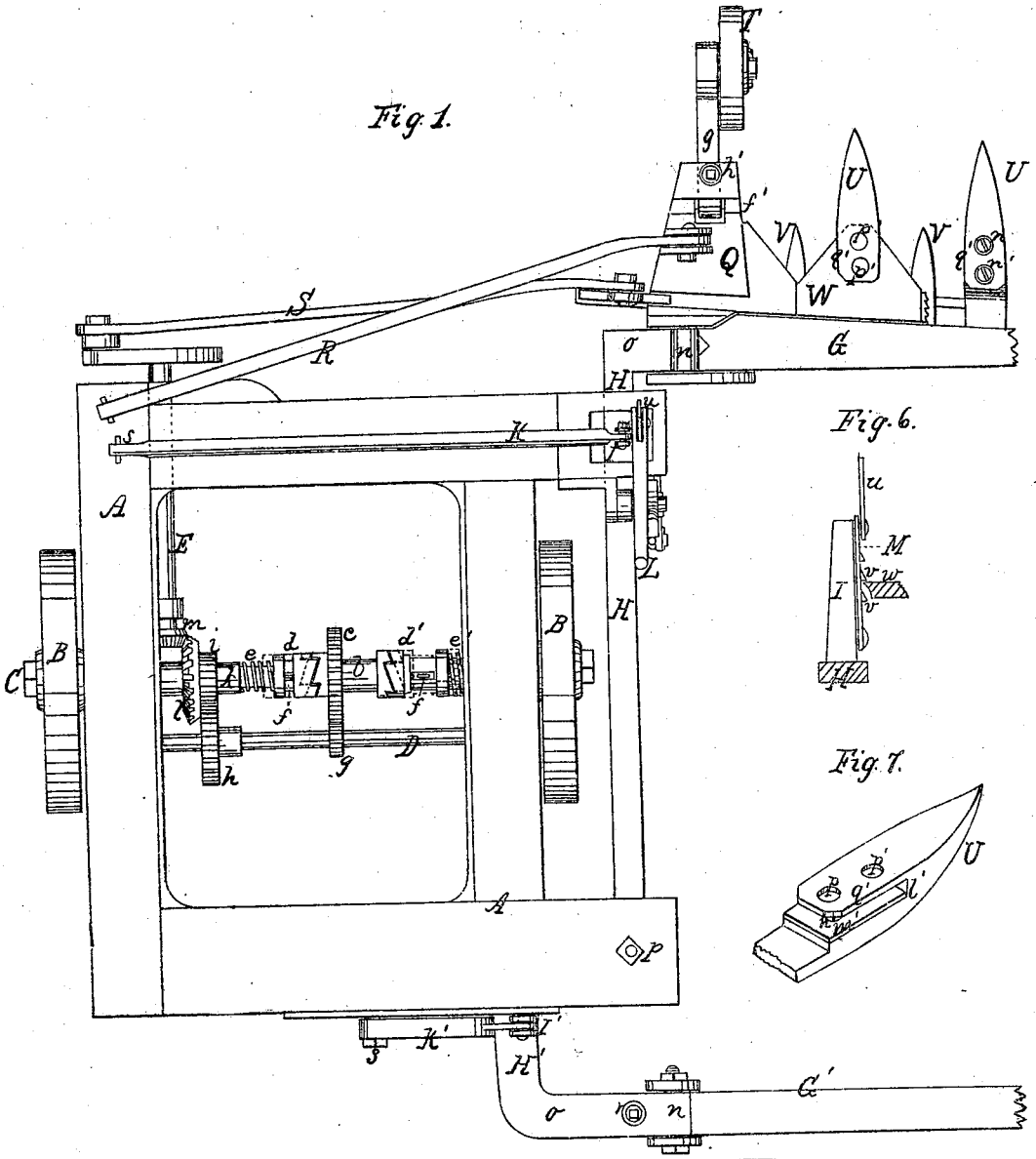
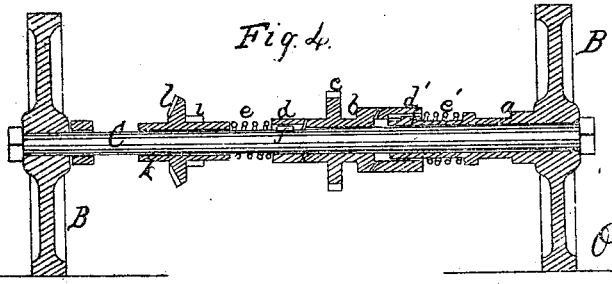


Fig. 6.

Fig. 7.

Fig. 4.



Witnesses.

J. A. Davis

L. F. Osgood

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Sheet 2.
2 Sheets.

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Mower.

No. 53872 Patented Apr. 10, 1866.

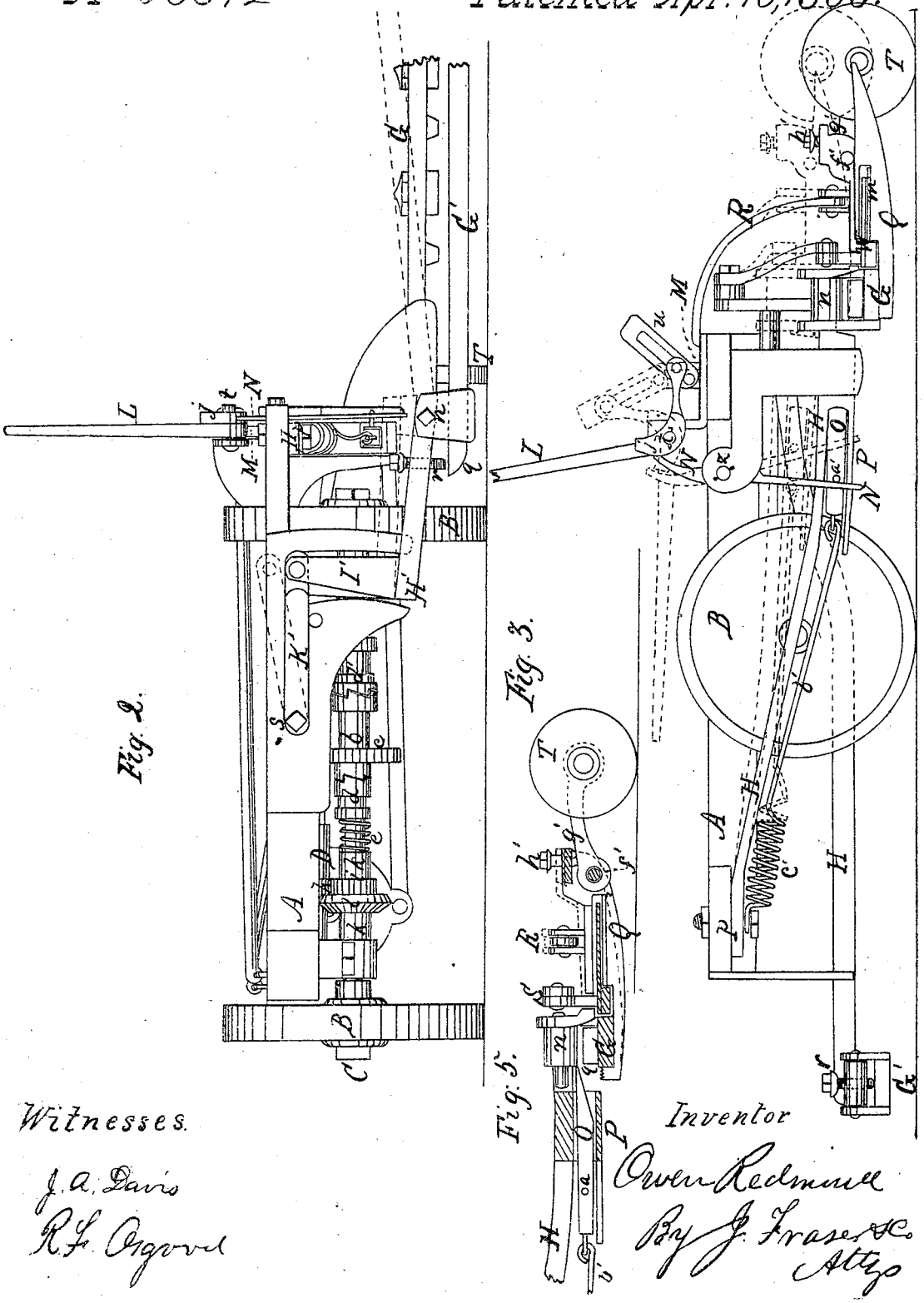

Fig. 2.

Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

OWEN REDMOND, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **53,872**, dated April 10, 1866.

To all whom it may concern:

Be it known that I, OWEN REDMOND, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Harvesters; 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 is a plan of my improved machine; Fig. 2, a rear elevation of the same; Fig. 3, a side elevation; Fig. 4, a central vertical section of the supporting and driving wheels, and showing more particularly the means for disengaging the gearing in backing up; Figs. 5, 6, and 7, views of detached parts.

Like letters of reference indicate corresponding parts in all the figures.

As represented in the drawings, A is the ordinary main frame, and B the supporting-wheels, of the machine.

The wheels of ordinary harvesters are provided with ratchets and pawls, which engage in going forward, so as to give motion to the gearing, but which disengage in going backward, so that the working parts will not operate. I dispense with this arrangement, which is subject to many objections, and employ in its place the following:

The driving-wheel B, at one side of the machine, Figs. 1 and 4, is secured rigidly to the axle or shaft C, which turns with it, but the other wheel B, on the opposite side of the machine, is secured to a collar or sleeve, *a*, that turns loosely on the shaft. On the center of the shaft is also situated a sleeve, *b*, which turns loosely, having a cog-wheel, *c*, and with the ends of this sleeve engage couplings *d d'*, the one pressed forward into engagement by a spring, *e*, situated around the shaft, and the other by a similar spring, *e'*, situated around the sleeve *a*. In order that the couplings *d d'* shall revolve with the shaft and sleeve on which they rest, they are provided with longitudinal grooves on the inside, in which rest feathers *f f*.

The cog-wheel *c* gears with a pinion, *g*, on another shaft, D, which also has a cog-wheel, *h*, gearing with a pinion, *i*, secured to a sleeve, *k*, also turning loosely on the shaft of the driving-wheels. On this sleeve is a bevel cog-wheel, *l*, that gives motion to a pinion, *m*, that drives the pitman-shaft E.

By this arrangement it will be perceived that when the driving-wheels move forward the couplings *d d'* will engage with the central sleeve, *b*, and the gearing will be actuated; but when the wheels move backward the couplings will disengage and the running machinery will stop. If one wheel goes forward and the other backward, as in turning a corner, the gearing will receive motion only from that wheel which is going forward, and there is no liability of disarrangement. In the employment of this arrangement I obviate the use of the ordinary pawls and ratchets in the hubs of the wheels, which are very inconvenient and constantly getting out of order, and locate the coupling device outside on the shaft or axle itself, where it is easily reached and adjusted. In this manner, also, I locate the gearing operating the machinery in the most compact form.

Suitable clutches and levers may be connected, if desired, with the couplings *d d'*, to throw them out of engagement when it is desirable not to run the machine.

In the drawings I represent, for the purpose of illustration, two finger-beams, G and G', one being conveniently employed for mowing and the other for reaping, and one being situated at the front and the other at the rear of the machine. Each finger-beam is jointed at *n* to a bar, H or H', having a right-angled bend, *o*, and extending back toward the opposite end of the machine, where it is jointed at *p*, Figs. 1, 2, and 3, in such a manner as to allow the free end of the bar to rise and fall in raising or lowering the finger-beam, and also allow sufficient lateral turning motion to enable the outer end of the finger-beam to be elevated.

The inner end of each finger-beam projects inward a little beyond the joint *n*, as shown at *q*, Fig. 2, and on this projection rests the end of a pressure-screw, *r*, which passes through the bar H or H' above. By this means the outer end of the finger-beam may be adjusted to any desired elevation in running over the surface of the ground. This is of great advantage, since it gives the desired stiffness between the finger-beam and bar H

H′, while at the same time the finger-beam is allowed to adapt itself to the inequalities of the ground by the universal motion of the bar, as before described.

At a suitable position a standard, I or I′, is rigidly secured to the bar H H′, and to the top of this standard is jointed a connecting-bar, K or K′, pivoted in like manner to the main frame at *s*. The effect of this arrangement, it will be seen, is to elevate the outer end of the finger-beam to a greater height than the inner end is elevated when the said beam is raised to pass obstructions, as indicated by the red lines in Fig. 2. It is obvious that this result will be produced from the fact that as the connecting-bar K K′ turns around the pivot *s* it draws the top of the standard I I′ inward when it rises above the horizontal level. I regard this as one of the most important features of my invention. In other machines this effect is accomplished by complicated devices of stops, levers, &c., which are not only liable to disarrangement, but are difficult to operate, and are frequently not effective. My device is of the simplest character, cannot become disarranged under ordinary circumstances, and will always elevate the outer end of the finger-beam sufficiently to pass ordinary obstructions without difficulty when the finger-beam is raised. It will be seen that a very small movement of the inner end of the finger-beam will in this manner cause a comparatively large elevation of the outer end, the action being similar to a lever with its fulcrum placed near one end. This is of much advantage and distinguishes it from other devices of the kind, for in passing obstructions while the machine is in rapid motion it is necessary that a slight action of the driver shall produce a large movement of the finger-beam.

The finger-beam is raised by means of a lever, L, having its fulcrum at *t*, and whose short arm connects with a link, *u*, jointed at its lower end to a bar, M, which, in like manner, is jointed to the bar H H′. This bar M is provided with notches or teeth *v v*, Fig. 6, which, when raised, catch on a shoulder, *w*, of the frame and hold the finger-beam suspended at any desired height. The lever L is provided with a cam, *j*, at its rear, which, when moved backward, strikes the upper end of a rock-lever, N, pivoted at *z*, and whose lower end strikes a pin, or shoulder *a′*, of a slide, O. This slide rests in a guide, P, forming part of the bar H H′, and to its rear end is secured a rod, *b′*, connected with a spring, *c′*, which has the effect to draw the slide back. The front end of the slide is made wedging, as shown most clearly in Fig. 5. The first action in depressing the lever L is to move the slide O forward by the rock-lever N. This forces the wedge end of the slide over the projection *q* of the finger-beam, so as to hold the latter up while it is being raised. By the time this is accomplished the end of the short arm of the operating-lever strikes the upper end of the slot of the link *u*, and consequently raises the bar H H′, and with it the finger-beam. This arrangement enables me to stiffen the finger-beam and raise it at any time in passing an obstruction or otherwise—an action, so far as I am aware, unknown in any other machine.

The inner end of the finger-beam has a shoe, Q, of ordinary construction, which is braced by a jointed brace, R, as clearly represented in Fig. 1. This brace being jointed to the shoe on a line with the joint *n* of the finger-beam, and the pitman S playing freely, the finger-beam is allowed to turn over on the brace in going into the field. In the front end of the shoe is jointed, at *f′*, the bearing or shank *g′* of a grass-wheel, T. A pressure-screw, *h′*, passes through the shoe in front of the joint, and rests upon the top of the bearing in such a manner that by turning it down or up the shoe may be correspondingly raised or lowered, as indicated by the red lines in Fig. 5.

It is frequently necessary to adjust the heel of the finger-beam higher or lower to adapt the machine to the kind or condition of grass or grain which is to be cut. For instance, in cutting lodged grass it is necessary to have the finger-beam run very low, while in cutting heavy and course straw it must be higher. I accomplish this adjustment in a very simple and convenient manner, and the employment of the wheel prevents clogging by the cut grass. The object is to suitably support the shoe above the cut grass and to give it a suitble degree of vertical adjustment, and at the same time to prevent too much friction and clogging by the employment of the wheel, which takes the traction entirely, or nearly so, from the shoe, and also presses the grass down in front of it. A supporting-truck has been before employed, and the adjustment of the shoe itself has been before accomplished; but I am not aware that such an adjustment in combination with a supporting wheel or truck has ever before been known.

The fingers U are constructed in the usual manner, except that in the slot *l′*, where the sickle runs, is situated a removable steel blade, *m′*, Fig. 7, held in place by screws *n′*, which enter through holes *p′ p′* in the projection *q′*. This arrangement enables the blade to be removed at any time, the screws passing up through the holes *p′ p′*. This saves the great difficulty of sharpening experienced in ordinary machines. I can remove the blades in a few minutes' time and grind and replace them.

In addition to the ordinary fingers, I employ intermediate guards, V V, of less length than the fingers and not exceeding the width of the cutting-teeth. These guards have a double purpose, viz: first, to ward off small obstructions, such as stones; and, second, to assist in the operation of cutting. Small stones, which would otherwise come in contact with the knives and impede or break them, are thrown under the finger-beam by the guards, the wedge form of which is very effective in accom-

plishing this result. At the same time the knives of the sickle W, working closely over the sharp edges of these guards, cut the straw very effectively.

I am aware that intermediate fingers of less length have before been employed with the ordinary fingers of a harvester; but in such a device these intermediate fingers project at a distance beyond the ends of the cutting-teeth and the latter work through their slots as through the main fingers.

It will be seen that in my arrangement the guards V V do not project beyond the cutting-teeth, nor do the latter work through them, but over them.

It is well-known that where the knives work through the fingers the cut grass enters the slots and clogs the knives. Therefore it is desirable to have as few as can be used to advantage; but at the same time it is desirable to have as many cutting-points as possible. I increase the number of cutting-points, but not the number of closed slots. Were the points of the intermediate guards, V, to project beyond the cutting-teeth, they would be likely to catch the grass and clog; but by projecting only even with them the knives always keep them clear.

I do not claim simply raising the outer end of the finger-beam to a greater degree than the inner end by a single lifting action. Neither do I claim, broadly, an adjustment higher or lower of the shoe at the base of the finger-beam, nor simply a caster-wheel to support the shoe and run easily over the cut grass.

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

1. Engaging the gearing with and disengaging it from the driving-shaft C by means of the loose sleeve *b*, double couplings *d d'*, springs *e e'*, and turning sleeve *a*, the whole arranged, combined, and operating substantially as and for the purpose herein set forth.

2. The combination of the connecting-bar K and standard I with the finger-beam G, the bar being jointed at *s* and the standard forming a stiff connection with the finger-beam, or an extension thereof, and the whole being so arranged that a simple lifting of the finger-beam will elevate its outer end to a greater degree than its inner end, substantially as described.

3. The wedge-slide O, in combination with the heel-projection *q* of the finger-beam, for the purpose of stiffening and sustaining the latter before it is raised, substantially as described.

4. The combination of the slide O, rock-lever N, lever L, and link *u*, whereby the slide is first pressed forward to stiffen the finger-beam, and the latter is then raised, substantially as specified.

5. Supporting the shoe Q by the grass wheel or truck T, in connection with making said shoe adjustable higher or lower by the screw *h'* resting on the shank or bearing *g'* of the wheel, the whole arranged, combined, and operating substantially as set forth.

OWEN REDMOND.

Witnesses:
MANNING PACKARD,
R. F. OSGOOD.