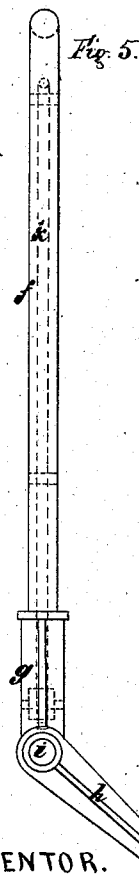
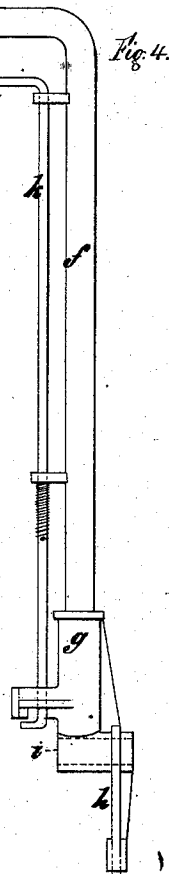
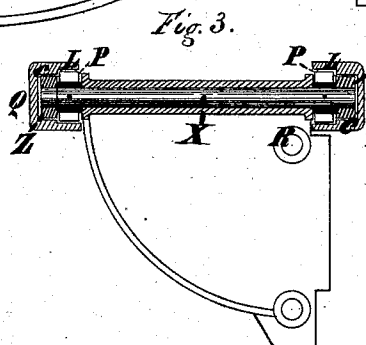
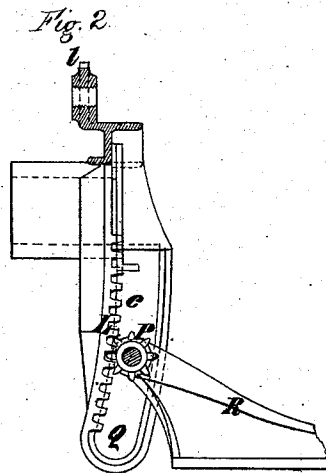
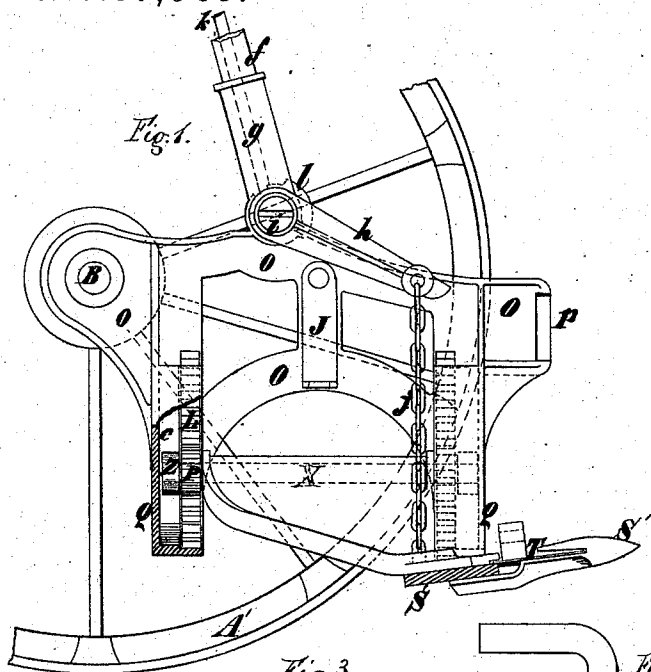


R. DUTTON.
Mowing-Machines.

2 Sheets--Sheet 1.

No. 157,589.

Patented Dec. 8, 1874.



WITNESSES:

Edwin H. Brown.

A. J. De Lacy.

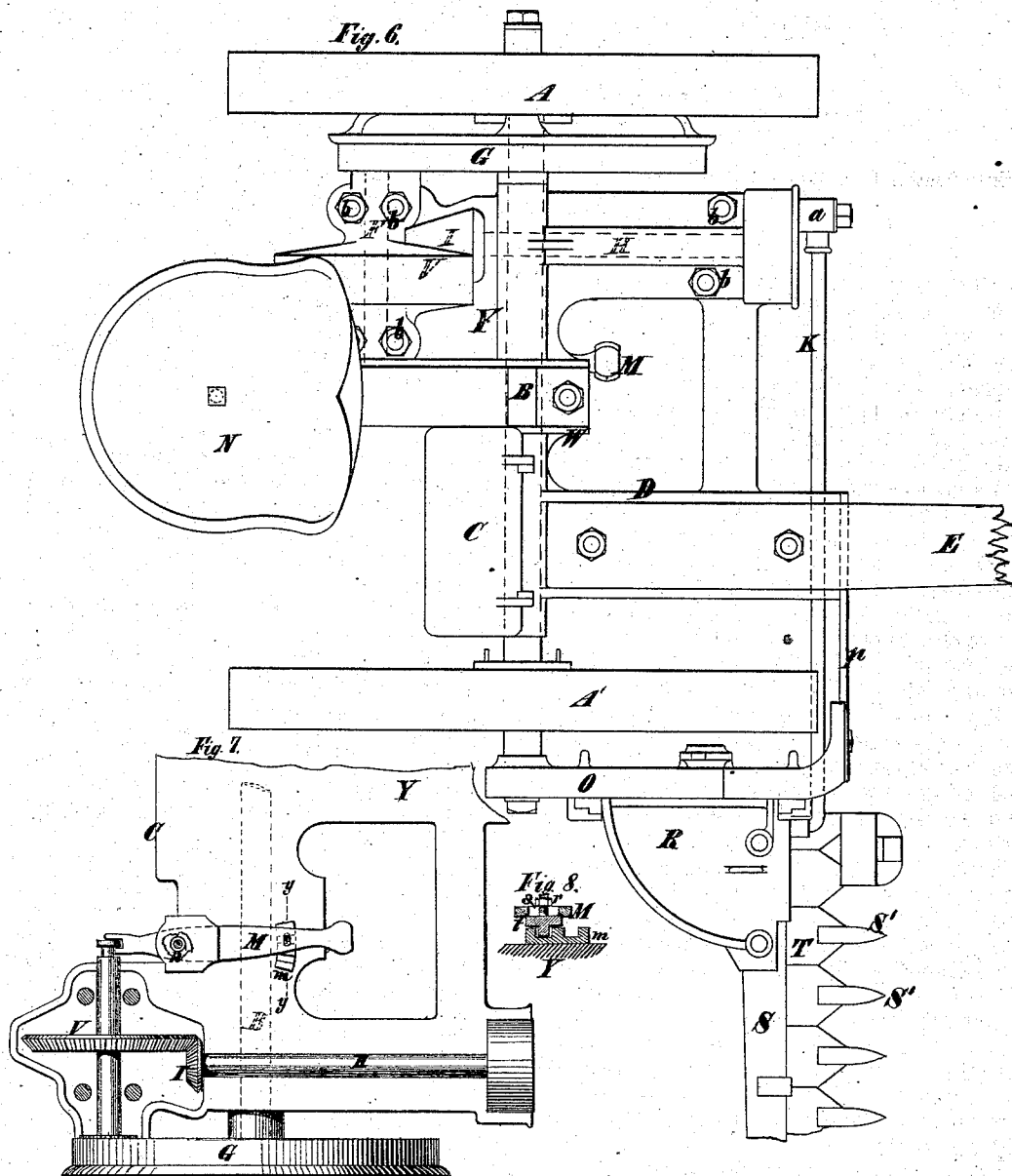
INVENTOR.

Rufus Dutton

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WITNESSES:

Edwin H. Brown.
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INVENTOR.

Rufus Dutton

UNITED STATES PATENT OFFICE.

RUFUS DUTTON, OF YONKERS, NEW YORK.

IMPROVEMENT IN MOWING-MACHINES.

Specification forming part of Letters Patent No. **157,589**, dated December 8, 1874; application filed September 14, 1874.

To all whom it may concern:

Be it known that I, RUFUS DUTTON, of Yonkers, Westchester county and State of New York, have invented a new and useful Improvement in Harvesting-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to certain improvements in that class of harvesting-machines which are provided with laterally-extending finger-bars; and it consists in a new and improved mechanism for connecting the finger-bar to the frame of the machine in such manner that said bar will be free to automatically rise and fall at either or both ends, as well as bodily, so as to conform to the inequalities of the ground when the machine is in use, the said bar resting or bearing upon the ground with no greater pressure than that due to its own weight, as will be hereinafter fully described.

In the accompanying drawing, Figure 1 is a side view of a portion of the inner driving-wheel, showing also the finger-bar and the side frame to which it is connected, and the mechanism by which such bar may be raised and lowered. Fig. 2 is a vertical central transverse section of the said side frame. Fig. 3 is a horizontal cross-section through the said side frame and the connecting-piece of the finger-bar. Fig. 4 is a rear view of the lever mechanism for elevating the finger-bar. Fig. 5 is a side view of the same; and Fig. 6 is a plan or top view of the machine. Fig. 7 is an inverted plan view of the power-transmitting gearing and shifting foot-lever, the cover of the gearing-box being removed. Fig. 8 is a vertical section taken on the plane indicated by the line *x x*, Fig. 7.

A A' designate the two driving-wheels of the machine, A' being the inner wheel, so-called, or, in other words, the one nearest the standing grass when the machine is in use, and both wheels being mounted on an axle, B, which constitutes the driving-shaft of the machine, in such manner that said wheels will turn loosely on the said shaft when the machine is backed, but will engage with said shaft and revolve it when the machine is

drawn forward in the usual manner. The main frame of the machine is provided with a covered tool-box, C, a socket, D, for receiving the pole E, a socket, W, for receiving the support of the seat N, and a box, Y, for containing the power-transmitting portion of the driving mechanism. This box Y is made in two parts, the lower part constituting a cover and fitting horizontally against the upper part, and the two parts being secured together in any proper manner—say, by screw-bolts *b*.

This method of constructing the gear-box provides for a very speedy and convenient opening of the same for inspection and repairing of the gearing.

Within the said gear-box is the shaft F, carrying at one end a cog-wheel, which engages with teeth provided on the inner periphery of a wheel, G, rigidly affixed to the axle B, and which shaft F also carries, at some portion of its length, a bevel-gear wheel, V, which, by means of a pivoted foot-lever, M, is thrown into and out of gear with a smaller bevel-gear wheel, I, secured to a shaft, H, running lengthwise of said box, and carrying at its forward end a crank-pin, to which latter is attached the pitman K, which operates the cutting-knives. The foot-lever M is pivoted to the under side of the main frame, and carries on its under side a tooth, *t*, which engages with a notched plate, *m*. A spiral spring, *n*, is preferably coiled around the fulcrum-pin of the lever for pressing the latter upward, so as to cause it to engage with the notched plate.

The tooth *t* is, in the example shown, provided with a bolt, *r*, which latter passes through a slot, *s*, running across the lever, said bolt being secured in the desired position along such slot by a nut applied to it on the opposite or under side of the lever. This provision for adjusting the teeth of the lever is a desirable feature, because it enables the said lever to be adjusted and locked in the right position for the bevel-wheel V to engage properly with the bevel-pinion I. O designates a side frame, so-called, which is arranged outside the inner driving-wheel A', and is hung at one end loosely upon this (the inner) end of the driving shaft or axle B, and is connected, at its forward end, rigidly to the main frame of

the machine—say, by a bar, *p*—as will be seen by reference to Figs. 1 and 6. *S S'* designate the finger-bar, and *T* the cutter-bar, to which latter the pitman *K* is connected at or near the heel of the finger-bar. These parts are of the usual construction. *R* designates a connecting-piece, which is secured at one end to the finger-bar *S S'*. My method of connecting the piece *R* with the side frame *O*, so that the finger-bar will rest upon the ground with a pressure due only to its own weight, and hence conform to the inequalities of the ground while at work, and at the same time be free to be raised and lowered designedly, and to be turned up vertically, and all this without the employment of either the double hinge connection or any vibrating frame, I will now proceed to describe. In the example of my invention shown in the drawing the side frame is provided with two downwardly-projecting parallel arms, *Q Q*, the inner side or face of each arm being provided with a vertical groove or recess, *c*, (see Figs. 1 and 2,) and each groove in being provided, on one side or wall, with a rack, *L*, the teeth of the racks of both arms being in line with each other. *P P* are two cog-wheels or pinions secured rigidly, with their teeth in line or parallel, near the respective ends of a shaft, *X*, which, in the present instance, passes through the upper end of the connecting-piece *R*, and is free to revolve therein, as will be understood by reference to Figs. 1, 2, and 3. The said shaft *X* also carries on each end a friction-roller, *Z*. (See Figs. 1 and 3.) The length of the shaft *X* and the size of the pinions *P* and friction-rollers *Z* are such that the ends of the said shaft, with its said pinions and rollers, when dropped down into the said grooves or recesses *c*, the said pinions will engage with the racks *L*, and the friction-rollers *Z* will bear against opposite walls of the said grooves not occupied by the racks *L*, as will be more clearly understood by reference to Fig. 3.

It will be observed that the connecting-piece *R* is caused to rise and fall bodily and at both ends with perfect uniformity and without any danger of the shaft *X* binding at either end, and I will here remark that the friction-rollers *Z* tend to keep the teeth of the pinions *P* to the proper depth in the racks *L*.

J is a pivoted or movable stop secured to the side frame *O* in such position above the connecting-piece *R* as to prevent the shaft *X* from jumping out of the grooves or recesses *c*, and also to form a knuckle or fulcrum for said connecting-piece to rest against when throwing the finger-bar into an upright or vertical position. When it is desired to remove said connecting-piece with the shaft *X* from the side frame *O*, the said stop may be swung round on its pivot out of the way. I will here remark that various other kinds of stops or catches may be substituted for the stop *J*, and perform the whole or a necessary part of the functions thereof.

The mechanism for raising and lowering the

finger-bar consists of, an angular lever, *f g h*, which is pivoted at or near the angle thereof by a fulcrum-pin, *i*, to the side frame *O*. The part *f* of the lever constitutes a handle, the part *g* a socket for the handle, and the part *h* an arm, to the end of which arm is attached a chain, *j*, which latter is also attached to the connecting-piece *R*. A bolt-rod, *k*, (see Figs. 4 and 1,) may be employed for engaging with a notched piece, *l*, on the side frame, in such manner as to lock the lever *f g h* in any desired position.

I will here remark that I deem it advantageous to make the grooves or recesses *c* slightly curved or arc-shaped, and concentric with the shaft *H*, so that the knives will be uniformly driven relatively to the fingers, whether the pinions *P* are farther up or down in the said grooves *c*.

I do not wish to restrict myself to the exact construction of the side frame and its attachments herein described, as it is obvious that many modifications may be resorted to without materially changing the operation of my invention. For instance, instead of the grooves or recesses *c*, pairs of parallel vertical rods having racks attached to or formed or cast with them may be employed, and guide-rollers could, in such case, be caused to bear on the outside of such guideways; or, indeed, double rollers or pinions bearing against the outer sides of both pairs of rods may be used; or, indeed, only two downwardly-projecting sufficiently-rigid rods or arms may be employed, and a pinion may engage with a rack upon one side, and a friction-roller or another pinion may bear against the other side, of each of such rods or arms.

It is obvious that the friction-rollers *Z* need not necessarily be employed, though I prefer to use them for the purposes hereinbefore stated; and, furthermore, in some cases, the pinions and racks might be dispensed with, and friction-rollers alone, working in suitable grooves or guideways, be employed; but in such case there must be some provision for causing the ends of the shaft *X* or journals to move simultaneously. I will also remark that pinions or wheels may be secured to a shaft journaled in or to the side frame, and that grooved ways or rods provided with racks may be attached to the heel of the finger-bar in such manner as to ride up and down on the pinions or wheels so attached to the side frames, and good results to be obtained.

From the foregoing description it will, of course, be manifest that my invention provides a means for attaching a finger-bar with its cutting-knives to the frame of a harvesting-machine, whereby, without, in any respect, interfering with a direct connection of a pitman with the said knives for oscillating the latter, the said bar throughout its length, at the heel as well as the toe, will rest or bear on the ground with a pressure due only to its own weight, thereby enabling the bar to automatically and freely rise at the heel or toe, or

both, when passing over inequalities in the ground; and that, in addition to this, the finger-bar is capable of being designedly raised bodily from the ground or swung up vertically by means of a suitable raising device accessible to the hand of the driver.

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

1. The combination, with the side frame O and connecting-piece R, of the racks and pinion-wheels and friction or guide rollers Z, substantially as and for the purpose specified.

2. The side frame O, provided with the

grooved or recessed ways Q Q and racks L, substantially as herein specified.

3. The combination of the stop J with the side frame O and connecting-piece R, substantially as and for the purpose specified.

4. The combination, with the foot-lever M and the notched plate *m*, of the laterally-adjustable tooth *t*, substantially as and for the purpose herein specified.

RUFUS DUTTON.

Witnesses:

EDWIN H. BROWN,

A. J. DE LACY.