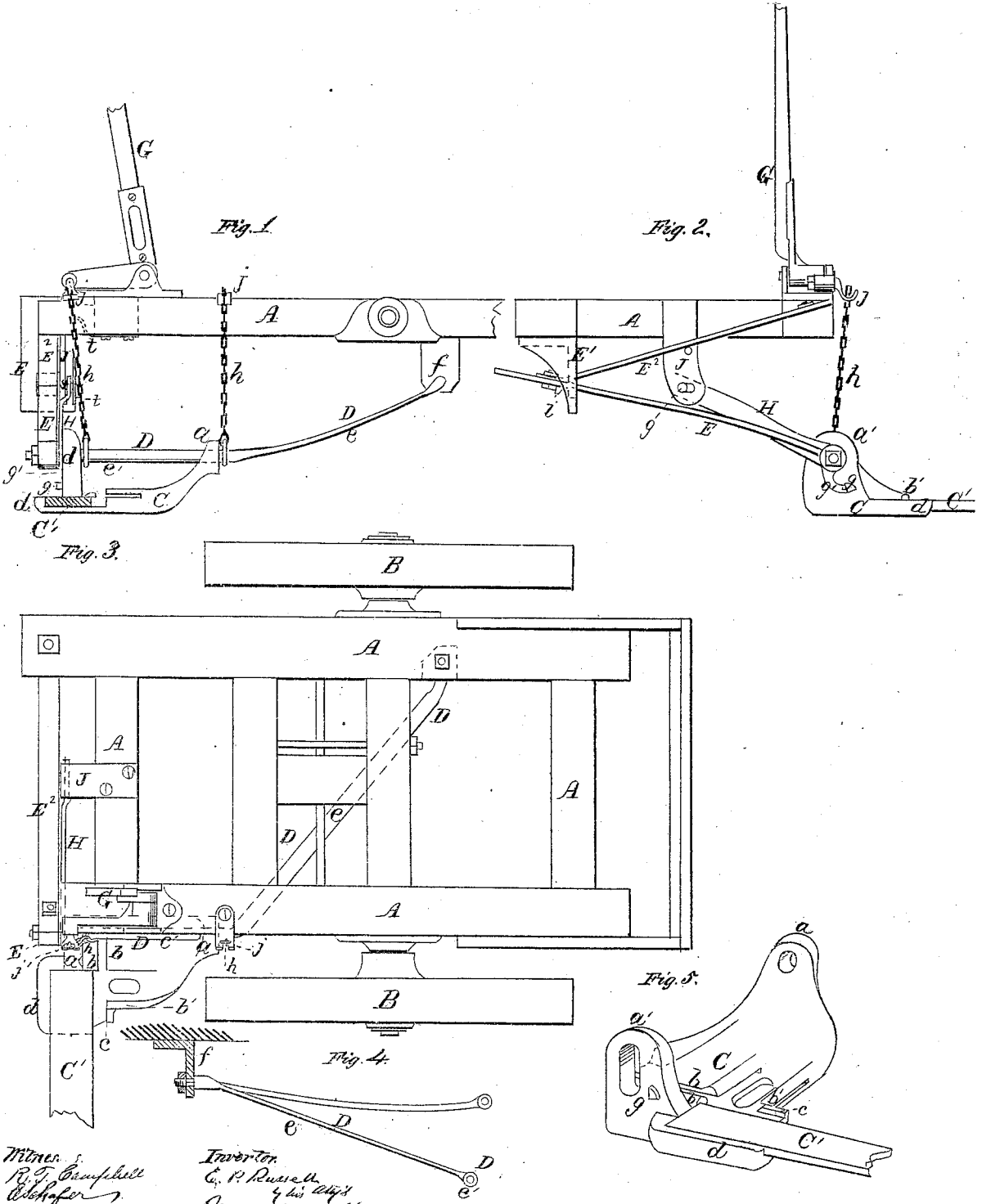


E. P. Russell,
Mower.

N^o 50,959.

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Witness:
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UNITED STATES PATENT OFFICE.

E. P. RUSSELL, OF MANLIUS, NEW YORK.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 50,959, dated November 14, 1865.

To all whom it may concern:

Be it known that I, E. P. RUSSELL, of Manlius, in the county of Onondago and State of New York, have invented an Improvement in Harvesters; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation, showing the improved mode of attaching the cutting apparatus to the frame of the machine. Fig. 2 is an elevation of the rear end of the machine. Fig. 3 is a top view. Fig. 4 shows the spring draw-bar in two positions. Fig. 5 is a perspective view of the shoe, to which the cutting apparatus is attached.

Similar letters of reference indicate corresponding parts in the several figures.

This invention is intended to dispense with the double-rule joint, or many joints, in the attachment of the cutting apparatus of harvesting-machines to the frames thereof, and at the same time to provide for obtaining all the motions which are afforded by the double or compound joint attachment, such as elevating and depressing the cutting apparatus bodily, allowing the latter to rise and fall or float over uneven surfaces, and also allowing the cutting apparatus to be vibrated and thrown up in a vertical position or folded over the frame of the machine.

To effect these objects, the nature of my invention consists in attaching the cutting apparatus to a draw-bar or its equivalent, which has a rigid fastening to the frame of the machine, and which possesses flexibility or elasticity in such degree as will admit of its free end being vibrated according to the amount of motion which is required of the cutting apparatus in elevating it bodily from the ground, or allowing it to accommodate itself to uneven surfaces, as will be hereinafter described.

My invention further consists in attaching the rear end of the cutting apparatus or the rear end of the drag-bar thereof to the frame of the machine by means of a spring-bar or a sliding bar in such manner that a firm lateral brace will be secured for the cutting apparatus without hinging said bar to the frame of the machine, as will be hereinafter described.

My invention also consists in providing for elevating the outer end of the cutting appara-

tus much faster than the inner end thereof during the act of raising the cutting apparatus bodily from the ground, at the same time stiffening the joint connection and affording a firm support for said parts against lateral displacement, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

A represents the frame of the machine, which may be constructed of longitudinal and transverse beams secured together and mounted upon transporting-wheels B B, as shown in the drawings, or in any other suitable manner.

C represents a metal shoe, which is cast with elevations *a a'* to receive through them the longitudinal portion of a drag-bar, and also with overhanging lips *b b'* and a guide or shoulder, *c*, for receiving the inner end of the sickle and its bar and keeping these parts down in place. There is also cast with the shoe C a projection, *d*, having a recess in it adapted for receiving the inner end of the finger-beam C', as shown clearly in Fig. 5. The rear lug, *a'*, of this shoe C has an oblong slot through it, and the lug *a* has a tapering hole through it, the object being to allow the rear end of the shoe to rise or fall upon its bar and accommodate itself to uneven surfaces in the ground.

D represents the drag-bar to which the cutting apparatus is pivoted, which bar consists of a flat elastic portion, *e*, extending diagonally across the frame of the machine, and a round portion, *e'*, extending in a line parallel with the length of the frame A, as shown in Figs. 1, 2, and 3. The forward end of the spring or flat portion of bar D is rigidly secured to a fixed plate, *f*, which is bolted to that side of the frame A which is opposite to the side on which the cutting apparatus is attached. Fig. 4 shows one mode of securing the forward end of the bar D rigidly to the supporting-frame A. The shoe C is slipped upon the longitudinal portion, *e'*, of the bar D so that its finger-bar C' will be at or nearly at right angles to the side of the frame A, and this shoe is held in place by means of a nut on the rear end of said portion *e'*, as shown in Figs. 1 and 2.

E represents a flat bar, which may be made of spring metal or not, as may be desired, and which has an eye formed on one end to receive the rear end of the drag-bar D, to which latter

it is suitably secured. The opposite end of bar E is passed loosely through an oblong slot through a plate, E', and has secured to it a spring-bar, E², which is secured rigidly to the longitudinal beam of frame A that is on the right-hand side of the frame. The inclined bar E is prevented from slipping out of the slot through plate E' by means of a lug, *i*, shown in Fig. 2, in which figure it will be seen that the spring E² and bar E form a V and sustain the rear end of the drag-bar D against lateral strain. The spring E² serves as a brace and also as a means of attaching the rear end of the drag-bar D to the frame of the machine without the employment of a hinge or articulating joint.

On the rear side of the vertical projection *a'* is a lug, *g*, which is intended to serve in conjunction with a projection, *g'*, as a means for preventing the outer end of the cutting apparatus from dropping down when the cutting apparatus is elevated bodily from the ground by means of the lever G and chains *h h'*. During the operation of cutting the parts *g* and *g'* do not come into contact. This only occurs when the rear end of the shoe C bears upon the drag-bar. The chain *h* is attached at its lower end to the drag-bar at a point near the projection *a'*, and the upper end of this chain is attached to a claw or hook, *j*, which is pivoted to the short arm of a rectangular lever, G, that has its bearings upon the frame A, as shown in Figs. 1, 2, and 3. The chain *h'* is attached to the bar D, directly in front of the projection *a* of the shoe, and also to a claw or hook, *j*, on the frame A. Both chains can be lengthened or shortened at pleasure.

H represents what I term a "gag-bar," which is connected at its lower or outer end to the drag-bar D, between the bar E and projection *a'* on shoe C, and at its upper end to a pendant, J, by means of a pin, *s*, which plays in a transverse slot in said pendant. A spring, *t*, in front of the pendant presses against the bar H, and keeps its pin *s* in its slot.

The object of using the bar H is to stiffen the joint of the cutting apparatus with its bar D, and to prevent the inner end of the cutting apparatus from being raised, when lever G is used in a vertical line, the effect being to throw the heel of the shoe outward and thereby causing the outer end of the cutting apparatus to be lifted faster and higher than the inner end thereof. Without such a bar the cutting apparatus would be lifted bodily in a horizontal plane.

From the above description it will be seen that I attach the cutting apparatus to the frame of the machine by means of but one articulating joint and spring-rods. The joint admits of the cutting apparatus vibrating and accommodating itself to the inequalities in the surface of the ground, and the spring-bars serve to allow the cutting apparatus to be elevated or depressed.

The spring portion of the drag-bar is not materially weakened by flattening it, so that it does not serve as a brace, nor is the spring E² weakened in such manner as to impair it for the office which it has to perform.

If desirable, the bar E may be made of spring metal and rigidly attached to the frame of the machine like the bar D; but I prefer allowing a longitudinal sliding movement to bar E, in raising or lowering the cutting apparatus, as the latter raises much easier and higher than it otherwise would. The plate or bracket E', through which the spring E² and bar E play is intended merely to prevent these bars from swaying about in lifting the cutting apparatus.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The angular diagonal spring draw-bar D *e*, serving as a hinge for the cutting apparatus to turn on, as a flexible brace and support for said apparatus to rest and move upon bodily, and also as a draw-bar, substantially as described.
2. The V-spring E E², constructed and applied to the harvester-frame and cutting apparatus, substantially as and for the purpose set forth.
3. The combination and arrangement of the spring E E², angular hinging and bracing spring draw-bar, and the cutting apparatus of the harvester, substantially as and for the purpose set forth.
4. The combination of the bar H, arranged and operating as described, with the cutting apparatus, and devices upon which said apparatus is suspended, substantially as and for the purpose set forth.
5. The bar H, attached to the hinge of the cutting apparatus by one of its ends, and fitted to a slotted plate, J, by its other end, and operating in the manner described, all for the purpose set forth.

E. P. RUSSELL.

Witnesses:

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