

(No Model.)

2 Sheets—Sheet 1.

C. A. A. RAND.

DEVICE FOR RAISING AND LOWERING HARVESTERS.

No. 461,249.

Patented Oct. 13, 1891.

Fig. 1.

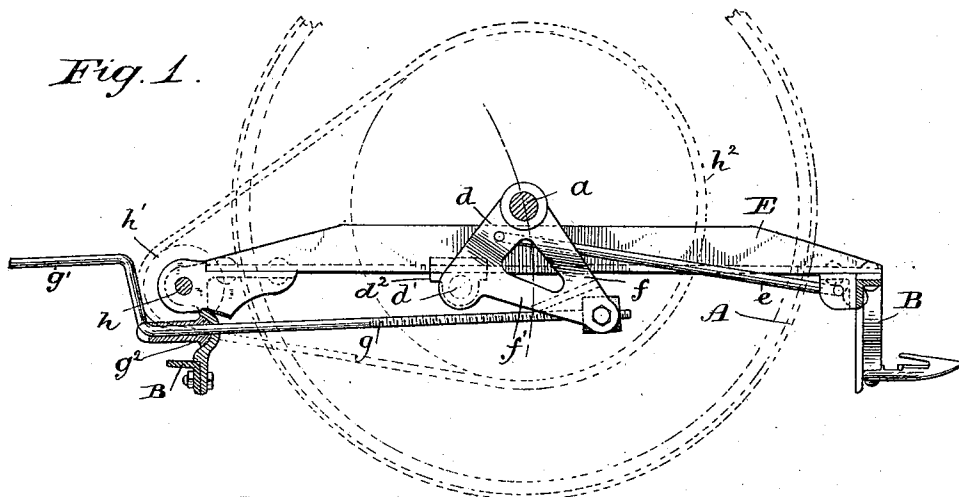


Fig. 2.

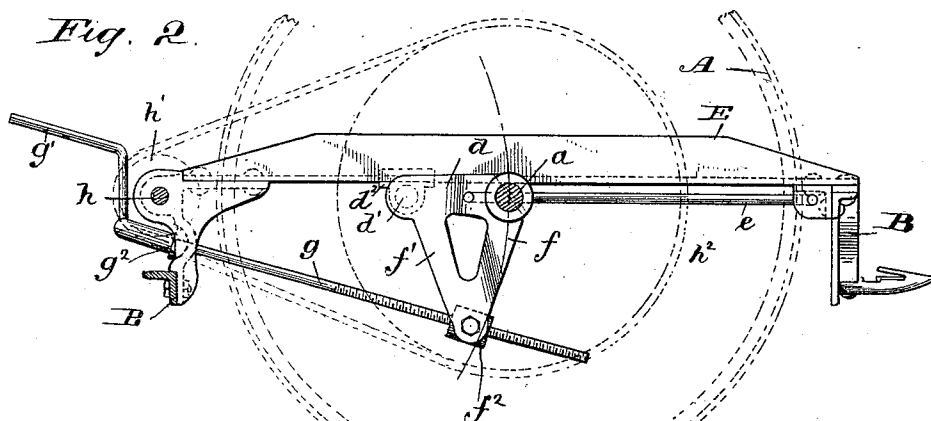
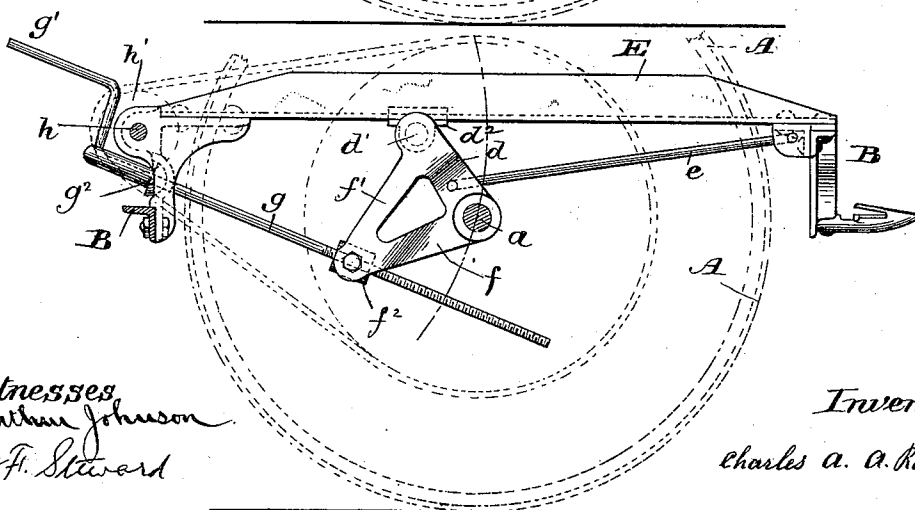


Fig. 3.



Witnesses
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(No Model.)

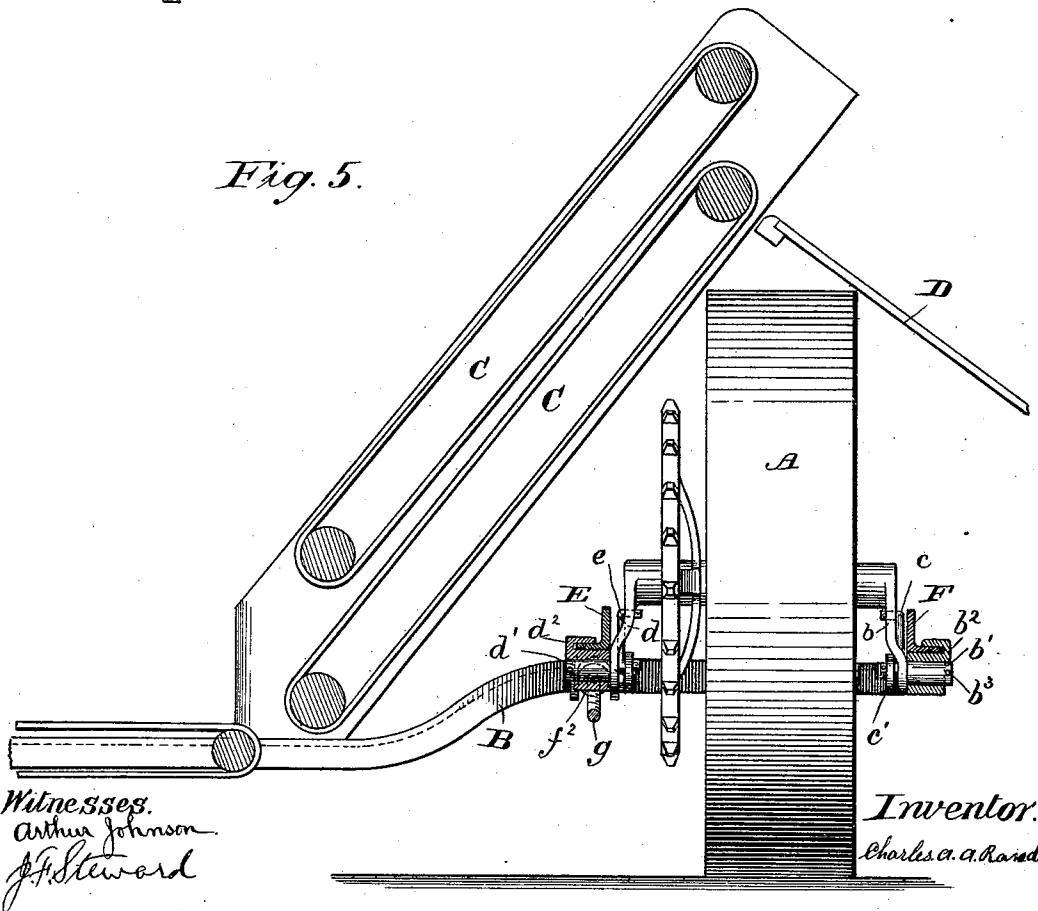
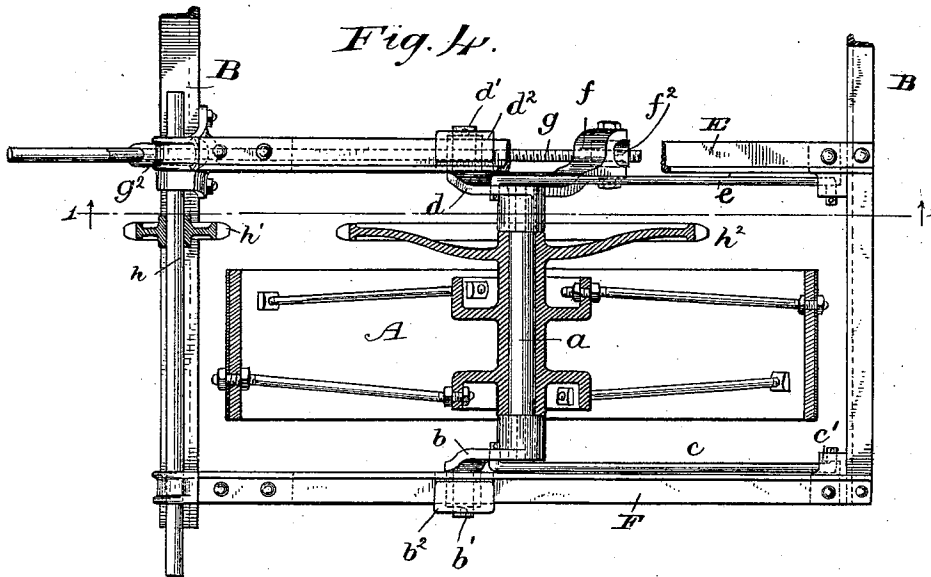
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

CHARLES A. A. RAND, OF CHICAGO, ILLINOIS, ASSIGNOR TO WILLIAM DEERING & COMPANY.

DEVICE FOR RAISING AND LOWERING HARVESTERS.

SPECIFICATION forming part of Letters Patent No. 461,249, dated October 13, 1891.

Application filed June 13, 1891. Serial No. 396,139. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. A. RAND, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Devices for Raising and Lowering Harvesters, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figures 1, 2, and 3 are side elevations illustrating so much of a harvesting-machine embodying my improvement as is necessary to make the principles of the invention clear. In them the main frame is shown in three of its positions—highest, medium, and lowest. Fig. 4 is a plan view, part in section. Fig. 5 is a rear sectional view.

In the majority of self-binding harvesters now used the raising and lowering device consists of an axle provided with pinions at its ends, the latter adapted to roll in segments secured to the sills of the harvester. The resistance due to friction and to mud getting in the segments makes it difficult to produce the desired adjustments. For these and other reasons I have dispensed with them and secured to the ends of my axle arms that are pivoted to the main frame in such a way that the axle may be swung up and down relative to the frame and also by proper instrumentalities be guided.

A is the main driving-wheel; B, the front and rear platform-sills; C, the elevating devices, and D the binder-table. Connecting the front and rear sills are the side sills E and F, properly secured to the former by bolting or riveting. Between these the main wheel is placed.

a is the axle, to the stubble end of which is keyed the arm b, which terminates in the wrist b', which in turn is free to move in an eye in the block b². This block is adapted to slide freely fore and aft beneath the side sill F, and is hooked thereon, as shown in Fig. 5, so that it may be held in proper relation relative to the side sill. In order that the pivot-piece b² may not move off from the flange of the side sill a key b³ is provided.

c is a rod extending from an eye in the arm b forward to a point near the front of the frame, where it is pivoted in a suitable casting c'.

Now turning to the grain-side portion of the main frame a similar construction is found, d being the arm secured to the axle and having the pivot d' in the guiding-block d² and connected to the forward part of the frame by the pivoted link e. From the hub of the arm d extends another arm f. To give proper strength to the latter it is connected by a brace portion f'. To the lower end of f is pivoted a nut f², into which is threaded the shaft g, provided with a permanent or detachable crank g', guided in the socket-form bearing g². The arms b and d are pinned to the axle, so that when the arm f is moved the axle and arms will be swung up and down. Hence the whole device which connects the sill to the main frame may be controlled by the single arm f.

It will be observed in Figs. 1, 2, and 3 that the link e is pivoted to the arm d at a point eccentric to the axle, and that as the axle is raised and fallen the link is swung on the frontal pivot as an axis into various positions, three of which are shown. It will also be seen that the pivoted sliding blocks b² and d² have changed their positions during the adjustments, as shown in the various figures; but because of the swinging movement of the links and the sliding movement of the pivot-blocks the center of the axle, is moved in the arc of a circle, the radius of which coincides with the center of the shaft h, on which is the driven sprocket-wheel h', over which a chain (shown in dotted lines) is thrown, and the latter is also thrown over the main driving sprocket-wheel h² of the main supporting wheel.

The proportions of the arms d and b relative to the length of the links e and c and the point of pivoting the said links to the arms are such as to cause the actual movement of the axle relative to the frame to be in a true arc. The proportions shown in the drawings are approximately correct to give a movement such as to maintain the driving-chain at a substantially uniform length.

In some harvesting-machines the axle is not supported at both ends. My device is applicable to such, and my drawings may be considered as showing a suitable construction. If the axle were cut off at the stubble end of

the hub and the outer part dispensed with, it would be but necessary that the parts at the grain end of the axle be made stronger than shown.

5 I have shown the screw-shaft extending rearward as the best means for rocking the axle support or supports; but the latter may be rocked in any suitable manner and the screw-shaft I shall refer to in my claims simply as one of the means whereby the adjust-
10 ments may be effected.

I have shown the driven sprocket-wheel at the rear of the machine and the links *c* and *e* pivoted at the front; but it may sometimes
15 be desirable to reverse the parts and have the driven sprocket-wheel at the front of the machine. The principle, however, will not be changed nor will it be found necessary to change the proportions unless it is desired to
20 use a longer or shorter chain.

I have shown the location of the axes of the controlling-links in what I consider to be the best position; but I find by experiment that they may be varied very materially, and do
25 not limit myself to the precise position shown, but shall consider any place of pivoting and proportioning which controls the movement of the axle in the proper arc of a circle to be an equivalent.

What I claim as my invention, and desire 30 to secure by Letters Patent, is—

1. The main axle rigidly secured to one or more arms jointed to movable pivotal pieces, the latter adapted to be guided in fore-and-
35 aft direction by the sills of the frame, the said arms controlled in a fore-and-aft position by one or more links pivotally connected at a point forward of the axle, and means for rock-
40 ing the said arms on their pivots, substantially as described.

2. The combination, with the frame of the harvester, having the sidesills *e* and *f*, of the guiding pivotal blocks, the arm or arms on the axle adapted to rock in and be guided
45 thereby, a pivoted controlling link or links, the arm *f*, and screw adjustment therefor, substantially as described.

3. The main frame, the axle provided with the pivoted arm or arms, the latter suitably guided and permitted to move fore and aft
50 and controlled by the pivotal links, the arm *f*, and the screw-adjustment shaft *g*, pivotally secured to the main frame, all combined substantially as described.

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Witnesses:

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ARTHUR JOHNSON.