R. DUTTON.

Harvester.

No. 74,210. Patented Feb. 11, 1868.

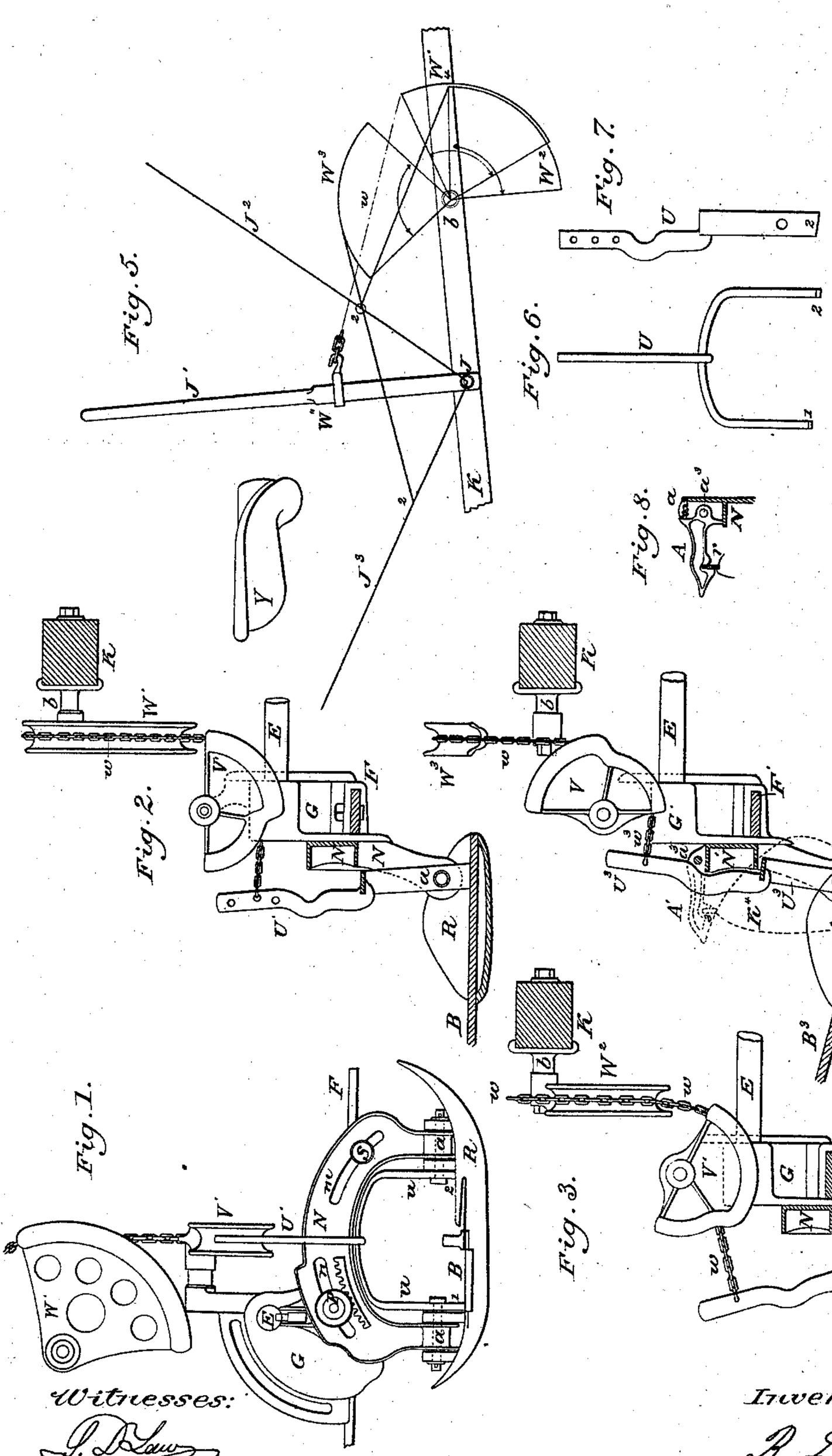

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

United States Patent Office.

RUFUS DUTTON, OF NEW YORK, N. Y.

Letters Patent No. 74,210, *dated February* 11, 1868.

IMPROVEMENT IN HARVESTERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, RUFUS DUTTON, of the city of New York, in the county of New York, and State of New York, have invented a new and improved Method of Raising and Sustaining the Finger-Bar of Harvesting-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, and of its mode or manner of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and making a part of this specification.

The nature of my invention consists in a new and improved method of raising the finger-bar to any desired height, and also of a device for holding or sustaining the finger-bar in position when folded upon the machine.

Figure 1 is a side view of a portion of a machine, showing the shoe, arch-piece, and sheaves, for raising the finger-bar, such several parts being placed in proper position with respect to each other.

Figure 2 is an end view of such parts, showing them as they are when the finger-bar is level.

Figure 3 is a similar view of such parts, showing them as they are when the end of the finger-bar is below a level.

Figure 4 is a similar view of such parts, showing them as they are when the outer end of the finger-bar is elevated.

Figure 5 shows the location of the driver's seat, and the different positions of the lever and sheaves corresponding to the different elevations of the finger-bar.

Figures 6 and 7 are different views of what is called the shoe-lever.

Figure 8 is a detached view of the shoe-hook, or hook for holding the bar when folded.

The finger-bar is raised or lowered by means of the shoe-lever U, acted upon by the chain *w*, and sheaves V and W, which are worked by the lever I, and the position of such lever U is shown in fig. 1. Such lever, toward its lower end, is forked, as shown in figs. 1 and 6, so as to have two feet or bearing-points 1 2, and is fastened to the shoe by the bolts *a a*, which pass through the feet of such lever, and through the shoe, forming a hinge for the lever to turn upon; such bolts also connecting the shoe to the arch-piece N. The feet or ends 1 2 of such lever are rounded on their edges toward the finger-bar, so that it can turn freely toward such finger-bar B, but such feet or ends are square on the opposite edges, so that the lever will be rigid with the shoe, when turned in a direction toward the machine. Fig. 2 shows the position of such lever when the finger-bar is level; such lever being rigid in the direction toward the frame. Figure 4 shows such lever, drawn by the chain, passing over the sheaves V^3 and W^3 until it has been brought against the arch-piece N. As such lever, when turned toward the machine, is rigid with the shoe, it will, when drawn against the arch-piece, as shown in fig. 4, raise or turn up the shoe, and thereby elevate the outer end of the finger-bar, giving to it the position B^3, fig. 4. When the lever U is drawn to the position shown in fig. 4, the outer end of the finger-bar will be raised or elevated from sixteen to eighteen inches. When the lever U is brought in such position, in contact with the arch-piece, if further power is applied, or the chain *w* drawn up further, it will have the effect to raise the shoe and bar, together with the front end of the machine, so as to elevate them all from eight to nine inches, or raise the shoe about that distance from the ground. The length of the chain *w* is also such as to allow the outer end of the finger-bar to droop from sixteen to eighteen inches, as shown in fig. 3.

By making the lower part of the lever U forked, as shown in figs. 1 and 6, and thus causing it to rest and act upon the shoe, on both sides of the finger-bar, and near where such shoe is connected to the machine or arch-piece, the strain on the shoe is more evenly applied, and there is less tendency to twist or break the lever than when the lever is applied to only one end of the shoe, and upon or near only one of its hinges. In the upper end of such lever U are a number of holes, by which the chain *w* is connected to such lever, according as it is desired to raise the inner end of the bar first, or the whole bar bodily, or the outer end of the bar first. When it is desired that the inner end or heel of the finger-bar should be first raised, the chain should be connected to the lever by the lower hole. When the whole bar is to be raised bodily, the chain should connect by the middle hole; and when the outer end of the bar is to be first raised, the chain should connect by the upper hole.

The sheave V^1, fig. 2, is cast in a single piece, but is double, or is formed with two arcs of different radii; that portion of such sheave nearest the lever U having the arc of the shortest radius. As the front end of the

frame is light, if the sheave V^1 were all of one curve, or upon the same radius, and the leverage the same on the side next the lever as on that side over which the chain passes, instead of raising the outer end of the finger-bar, by moving the lever I, the frame and shoe of the machine would be lifted; but by using a sheave having arcs of different radii, but described from a common centre, and thereby securing or affording different leverages, the outer end of the finger-bar can be first elevated, by applying force to the chain *w* passing over the upper sheave.

Fig. 5 shows the location of the driver's seat, and the different positions of the lever, which connects with the chain *w*, and by the operation of which the finger-bar is elevated. The red lines mark the two positions of the lever I as it is when the bar is in the positions shown in figs. 2 and 4, that is, when the bar is on the ground, and the machine ready for work, and when the outer end of the bar is elevated. The distance from 2 to 2 (the point 2 indicating where the chain connects with the lever) shows the length of chain taken up in moving the lever from the position I^2 to the position I^3. The red lines 2 4 show the direction of the chain when the lever is thrown forward, as represented by I^2, and the bar lies on the ground; the position of the sheave V^1 at such time being shown by the red line W^2. The dotted line *w* shows the direction of the chain when the lever is raised to a perpendicular position, as shown at I; the position of the sheave at that time being shown by the black line W^1, and the red line W^3 shows the position of such sheave when the lever is moved to its extreme position, shown at I^3.

When the bar is on the ground, and the machine at work, and the lever in the position I^2, the chain 2 4, passing near the centre, *b*, of the sheave, will exert or have but little power for raising the bar, and, when in this position, the first action of the lever is only to take up the slack or loose chain, which allows the outer end of the finger-bar to droop, in doing which the sheave will be brought nearly to the position shown by the black line W^1, before any power will be applied to raise the outer end of the lever. When the power is first exerted for this purpose, very much less is required than would be necessary to raise the whole bar, or the bar and the front end of the frame together. As the lever is carried further back, the position of the sheave constantly changes, increasing the distance in a direct line between the chain and the centre, *b*, and increasing also the leverage, until the sheave takes or reaches the position W^3. The power applied or exerted to raise the whole bar, or the bar and frame, acting upon a longer leverage, is thus, in fact, no more than, or about the same as, that required to elevate the outer end of the bar. By such arrangement of the sheave, chain, and lever, therefore, the outer end of the finger-bar, or the whole bar, or the bar and the front end of the machine, are raised by applying nearly a uniform quantity of power to the lever.

When the shoe and finger-bar are turned to a perpendicular position, as shown by the dotted lines R^4, fig. 4, they are held or secured in such position by a hook, A, dropping and fastening over the projection 3 on the shoe. Such hook, a detached view of which is shown in fig. 8, is pivoted to the arch-piece N, at a^3, above which pivot, and between the arch-piece and a suitable projection on such hook, is placed a spring, a^1, which keeps or holds the hook down over the projection on the shoe, and thus prevents the bar and shoe falling. When the shoe and arch-piece are rotated or moved on the bolts *s* and *p*, (the slots *m* and *n* allowing such movement,) for the purpose of elevating or depressing the points of the guard-fingers, the hook A being attached to such arch-piece moves with it and the shoe, and such hook and the projection 3 on the shoe remain unchanged in their relative positions with respect to each other. If, however, such hook were fastened to the frame of the machine, or to some part thereof, as the coupling-piece G and the arch-piece N were turned, the position of the hook remaining constant or unchanged, the projection on the shoe would not come in position to receive or take such hook, so as to hold the bar when elevated. The arch-piece N is operated by a lever, and is rotated on the bolts *s* and *p* for the purpose of elevating and depressing the points of the fingers, and thus varying the height of the cut of the machine.

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

1. In combination with a lever for raising the finger-bar, when such lever is forked, or in two parts, at its lower end, so that it will have two points or surfaces to act upon the shoe, the double sheave V^1 attached to the frame of the machine, substantially as and for the purposes set forth.

2. The use and application of the double sheave V^1, in combination with a lever for raising the finger-bar, operating substantially as and for the purposes set forth.

3. In combination with a device for rolling or turning the points of the fingers, so attaching to the machine the hook, that holds up the finger-bar when folded, that such hook shall receive the same motion, when the points of the fingers are raised or lowered, as is communicated to the shoe, for the purpose set forth.

4. In combination with the hook that holds the finger-bar when folded, when such hook is so attached to the machine that it moves with the shoe, when the finger-bar is turned, the application of a spring for holding such hook to the shoe, substantially as and for the purposes set forth.

R. DUTTON.

Witnesses:

S. D. LAW,

FRED. B. SEARS.