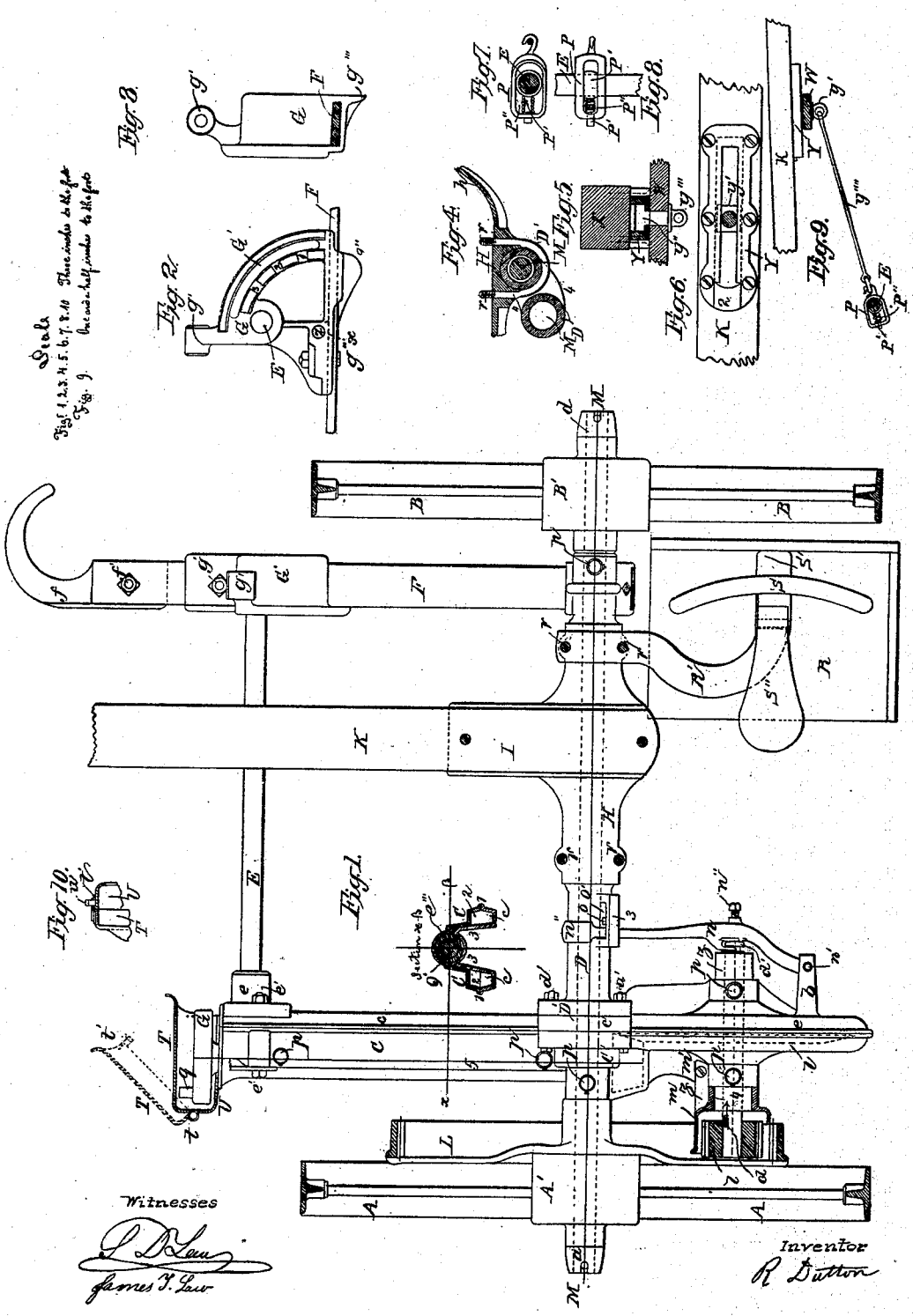
R. DUTTON.

HARVESTER.

No. 74,209. Patented Feb. 11, 1868.



United States Patent Office.

RUFUS DUTTON, OF NEW YORK, N. Y.

Letters Patent No. 74,209, *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 certain new and useful Improvements in the Construction of the Frames of Harvesting-Machines, and the parts immediately connected therewith; and I do hereby declare that the following is a full, clear, and exact description thereof, and of their 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.

My improvements have relation to an improved construction and arrangement of the frames of harvesting-machines, and of the parts immediately connected therewith, by which the whole machine is rendered lighter, more compact, less likely to get out of order, and more durable, and better adapted to the uses to which it is to be applied.

Figure 1 is a general plan view of the frame of a harvester, showing the relative positions of the several parts, and representing some parts in section.

Figure 2 is a representation of the coupling-piece, which connects the front end and the inner side of the frame, and to which also the finger-bar is attached.

Figure 3 is a side view of fig. 2.

Figure 4 shows a different mode of connecting the pole to the frame from that shown in fig. 1.

Figures 5 and 6 show the manner of attaching the whiffle-tree to the pole.

Figures 7 and 8 show the manner of attaching the draught-hook to the frame.

Figure 9 shows the connection between the whiffle-tree and draught-hook.

Figure 10 is a sectional view of part of the crank-wheel fender.

A hollow sleeve, which entirely covers the axle-tree between the two wheels, and the ends of which form the axle-tree boxes, constitutes one end of the machine, and to the other end of the machine, when such sleeve is the back end of the machine, the draught is attached.

A casing, within which are enclosed the bevel-gear and pinion, bevel-gear shaft, and crank-shaft, and the four journal-boxes for the same, forms the left-hand side of the frame, and the right-hand side is a strong wrought-iron bar, which forms the connection between the inside shoe and the axle-tree. The casing, which forms the left-hand side of the frame, is composed of two metallic pieces, C *c*, fig. 1. A section of this side of the frame, through the red line *a b*, is also shown, in which C C represents one of the metallic pieces of the casing, and *c c* the other part or piece of such casing. Q′ represents a section of the crank-shaft, enclosed within such casing, and *c″* shows the small open space between such shaft and the inner side of the casing, which space permits the crank-shaft to turn freely without rubbing against the inner surface of the casing. The parts or pieces C C *c c* meet together, as seen at the red line *a b*, and at 1 1, the two parts passing over and around the crank-shaft Q, and forming a complete covering or protection for it, 2 2 representing the open spaces between the two parts of such casing. The ends of the crank-shaft are turned of sufficient size to form suitable journals or bearings, opposite which the space *c″* is filled with Babbit or other suitable metal, to furnish proper boxes for such shaft to turn in; or, if preferred, the casing may be thickened, so as to fill such space *c″* at the ends of the crank-shaft, and then bored out, so as to form the journal-boxes. The casings C *c*, at one end, are also enlarged, and made of sufficient diameter to enclose and form a case for the bevel-gearing and pinion, as shown by the red lines in fig. 1. The lines 4 and 5 show the direction of the bevel-wheel and crank-shaft, and the projections *z z* on the casing, opposite each other, are made hollow, and filled with Babbit of suitable metal, to form the journal-boxes for the bevel-wheel shaft *d*. Such casing is made sufficiently tight, so that dust is excluded from nearly all the fast-running parts of the machine; and, as the journal-boxes are formed within this casing, the shafts and gearing cannot be thrown out of line by the warping or twisting of the frame. The keeping of the shafts and gearing in line is indispensable.

Near the inner end of the bevel-wheel shaft *d* is turned a groove, *d′*, fig. 1, in which rests a forked projection of the shifter-lever *n*. One end of such lever is pivoted at *n′* to a projecting piece, *b*, of the casing, and the other end rests in an elongated mortise, 3, on the axle-sleeve D, and on the upper side of such mortise is a projection, *o*, against which the edge of such lever rests and presses. The upper end of such lever is flattened, as shown at *n″*, to form a suitable surface for operating such lever with the foot. By shifting such lever

into the space *o'*, the bevel-wheel shaft *d* is moved in the direction of the arrow by the action of the forked projection of such lever in the groove *d'*, and the bevel-gear is thrown out of gear with the bevel-pinion. A reverse movement of such lever throws the parts in gear again. To the under side of such lever *n* is fixed a spring, the upper end of which bears on the sleeve, under the mortise 3, keeping the lever against it, the projection *o* holding the lever when shifted, so as to throw the parts in or out of gear.

To the outer end of the bevel-wheel shaft *d* is keyed or fastened the spur-pinion *l*, which is worked by the spur-gear L. A section of a fender for enclosing and protecting the spur-pinion *l* is shown at *m*. Such fender is cast with a hole sufficiently large to pass over the end of the projection on the casing C, and is held in place by the small bolt or screw *m'*.

C' *c'* are projections upon the casings C *c*, through which the axle-sleeve D passes, and on such sleeve is a projection, D', against and to which the casing projections C' *c'* are bolted by bolts *a' a'*, such bolts holding the casings firmly and rigidly to the sleeve, and also fastening the casings together. The forward ends of the casings are bolted firmly to the flange on the front end, E, of the frame, by the bolts *e' e'*. The front end, E, of the frame, is made of round rod or bar-iron, one and a quarter to one and a half inch in diameter, the ends of which are turned, so as to allow the clamp-piece *e* and the coupling-piece G to be firmly fastened thereto, such pieces *e* G being also used for fastening the front end of the frame to the sides C and F. Such clamp-piece or flange *e* is fastened to the casing by two bolts, one of which is shown at *e' e'*; the same bolts also fastening the two casings together, and likewise securing the back plate *u* of the crank-fender to the end of the casings. Such bolts thus serve several purposes, fastening the front end of the frame to the side casings, fastening the different parts of the casings together, and securing the crank-fender to the casing.

The side F of the frame is made of a single bar of iron, bent in a suitable shape to connect with the coupling-piece G on its under side, and sustain such piece at a proper height for supporting the finger-bar. An edge view of such bar F is shown in fig. 2, and a sectional view in fig. 3. To the end of such bar is fastened, by a bolt, *f''*, a hooked shield, *f*, for preventing the grass from falling upon the shoe, and thus clogging the knife.

The front end, E, of the frame passes through a hole in the coupling-piece G, as shown at E', fig. 2. This hole is placed above the bar F, thus elevating the front end of the frame high enough to pass over obstructions. Such coupling-piece G is also provided with a curved slot, G', the centre of which is at *x*, and below such slot are recesses 1 2 3, which slot and recesses are made use of in elevating the points of the finger-guards.

The sleeve D encases the axle-tree M, between the hubs of the wheels A' and B'. The ends of such sleeve are finished or constructed so as to form bearings for the axle-tree to turn in, while the opening in the body of the sleeve is enlarged, so that the axle will turn in it without rubbing. Such sleeve thus forms both a casing and a support to the axle, and as the bearings are at the ends of the sleeve, the weight of the machine is supported on the axle, close to the hubs. A sectional view of the axle is shown at M, fig. 2.

The pole K is connected to the machine by being bolted to a coupling-clamp, H, which is fastened so as to turn freely upon the axle-tree sleeve D. Such clamp H is so fastened to such sleeve by means of two clasps or clips, an edge view of which is shown at D', fig. 4, which pass around the sleeve, and the ends of which pass through the clamp H, as seen at *r r r r*, fig. 1, and *r r*, fig. 4, and on which are threads to take nuts to hold such clasp to the clamp. By such arrangement the pole is attached to the sleeve, directly over the axle of the machine, and thus both the pole and frame turn on a common axis. The pole is also free to work up and down, independently of the frame. To this same clamp-piece H are also fastened the foot-board and the seat for the driver. Such seat thus has its bearing directly over or upon the axle, and is controlled by and moves with the pole.

Fig. 4 shows another method of attaching the pole to the machine, which may be made use of when it is desirable that the weight of the driver should be employed in balancing or rendering lighter the front end of the machine. M is a section of the axle, and D of the sleeve around it, having ears or projections, 4 4, cast upon it, upon which is placed the coupling-clamp H, and around which may pass the clasps, as before described. By bolting the coupling-clamp H so that it will turn on such ears or projections, the weight of the driver is placed or thrown beyond the axle and on the side opposite the other end of the pole or frame. It is apparent that by so placing the weight of the driver on one side of the axle, as described, it will tend to balance the other end of the frame.

The crank-wheel fender is formed of two metallic pieces, U and T, connecting together by a hinge, *t*, and which, when closed, entirely cover and protect the crank-wheel, except at the end toward the finger-bar, and for a space sufficient for the working of the connecting-rod. The front part, T, of such fender is fastened or held, when shut upon the rear or back plate U, by means of a catch, *u'*, and spring, *t'*, which are shown more clearly in section in fig. 10. By so hinging the part T the operator can easily open the fender, as shown at T', to oil or fix the bearing, *g*, of the connecting-rod, and when the connecting-rod is placed on the crank-pin *g*, and the plate T closed and fastened by its catch and spring, such connecting-rod will be held in place on the crank-pin without the aid of any bolt or pin, as heretofore required. It is important that not only the under but the upper side of the crank-wheel should be protected, as when this is not done the long grass is liable to get wound about it, and interfere with the working of the machine. The fender described forms a complete covering and protection for the crank-wheel and the upper end of the connecting-rod against grass and other obstructions. As before stated, the back part of the fender is secured to the casing by the same bolts that hold the two parts of the casing together, and which fasten the front end of the frame to such casing.

Figs. 5 and 6 show a device for holding the whiffle-tree to the under side of the pole. K is a sectional view of the pole, and W' is a sectional view of the whiffle-tree. Y is the pole-iron, or an iron plate fastened to the under side of the pole, and *y''* shows an opening or recess therein, by which is supported and in which moves the plate or part *y'* (fig. 6) of the whiffle-tree iron, to the ring or hook *y'''* of which is attached the draught-rod

y'''', (fig. 9.) In the front end of such pole-iron Y is an opening, 2, (fig. 6,) by means of which the part y' of the whiffle-tree iron can be put into and removed from the recess y''. By unhooking the lower end of the draught-rod y'''', the whiffle-tree can be detached, by slipping the part y' out of the opening 2, without removing any bolt or screw; and, on the other hand, when the whiffle-tree is to be attached, it is only necessary to slide such part y' into the opening 2, and hook the lower end of the draught-rod to the hook P, (fig. 9.) The whiffle-tree is thus not only held to the under side of the pole, but can freely move forwards and backwards as the front end of the frame rises and falls. E, fig. 9, is a sectional view of the front end of the frame, around which passes the draught-hook, and to which it is fixed.

Figs. 7, 8, and 9 also show a manner of connecting the draught-hook to the frame, so as to relieve the frame and machine from sudden strain. E shows a section or part of the front end of the frame, and P the draught-hook passing around it. Behind such part E, and between it and the extension of the draught-hook, is placed a coiled spring, p'', supported by a pin or projection, p', extending backwards from the frame E, and through the back end of the hook P, as shown in the drawings. As the draught is applied to the whiffle-tree W, the spring p'' yields somewhat, and relieves the frame and machine from sudden strain, as in starting, or when the bar meets with resistance or obstruction. Such spring also renders the draught and action of the machine much easier, and more uniform in passing over uneven ground, and in overcoming the ordinary resistance to which it is subjected.

Through the shifter-lever n, and opposite the inner end of the bevel-wheel shaft d, passes a screw, n''', the point of which presses against the end of such shaft. By turning such screw out or in, the cogs of the bevel-gear and spur-pinion are made to fit properly together. As the gear is liable to become changed, from being worn by use, it is desirable to have some method by which the operator can conveniently adjust such gear whenever required. This he can readily do by means of the screw-bolt n''' operating on the end of the bevel-wheel shaft d.

Behind the axle-tree, and near the inner driving-wheel, is placed the raker's stand, for him to remove the grain from the platform when the machine is used as a reaper. Such stand is supported by the metallic piece R', (fig. 1,) which is fastened to the pole-clamp H by the clasps and their nuts $r\,r$. The board or platform R, on which the raker stands, is placed about eight inches below the top of the axle. S is a front piece for him to lean against while raking off the grain, and is fastened to the top of the standard S', and S'' is a piece on which the raker can rest when not at work, and which also steadies him in position, as he stands astride of it, and uses it as a kind of saddle. Such position of the raker behind and below the axle is found most convenient to enable him to easiest remove the grain from the platform.

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

1. In a harvesting-machine, having the four sides of the frame constructed of separate parts and rigidly fastened together, making one side of such frame encase and protect all the turning-shafts of the machine, and another side encase the axle, for the purposes set forth.

2. In a harvesting-machine, having a rectangular frame, its several sides being separate pieces and rigidly connected together, making one of the sides of such frame of two or more pieces, so that they will not only constitute one of the sides of the frame, but will also encase and protect the secondary gearing and pinion and shaft, substantially as and for the purposes set forth.

3. In a harvesting-machine, having a rectangular or four-sided frame, its four sides rigidly fastened together, making the end of the frame which is supported by the axle of the machine hollow, and passing the axle through it, substantially as and for the purposes set forth.

4. In a two-wheeled harvesting-machine, having a hinged finger-bar and a loose pole, and having the pole hinged to the frame, so that the centre or axis upon which the pole turns shall be the same with that upon which the frame turns, attaching the draught to the front end of such frame, and supporting the whiffle-tree or evener from the pole or shafts by a sliding or yielding support, substantially as and for the purposes set forth.

5. Constructing the crank-wheel fender so that it will be not only a guard for the crank-wheel, but will also support and keep the end of the connecting-rod on the crank-pin, substantially as and for the purposes set forth.

6. Forming the crank-fender in two parts, which are hinged to and upon each other, substantially as and for the purposes set forth.

7. The metallic piece y, for attaching to and supporting the evener from the pole, having flanges on its sides, or their equivalents, and open at the forward end, so that the evener can be connected or disconnected without the use of any bolt or pin.

8. In a machine, having two driving or supporting-wheels, and having a loose pole, supporting the raker's stand by the pole and behind and below the axle-tree, substantially as and for the purpose set forth.

9. The arrangement and use of the adjusting-screw, passing through the shifter-lever, or equivalent support, and operating upon the end of the bevel-wheel shaft, substantially as and for the purposes set forth.

R. DUTTON.

Witnesses:

S. D. LAW,

JAMES T. LAW.