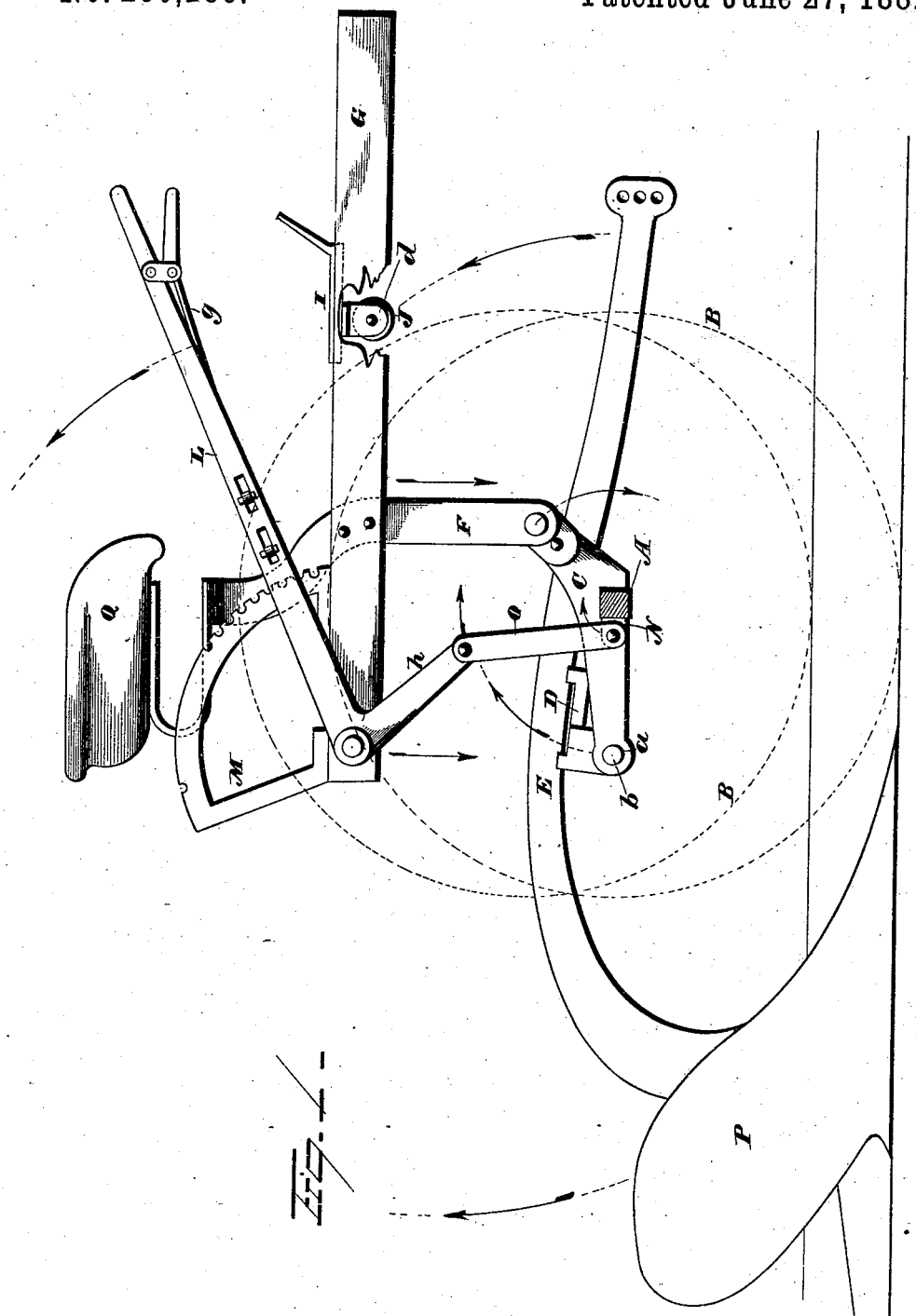
(No Model.) 3 Sheets—Sheet 1.

F. S. DAVENPORT.

WHEEL PLOW.

No. 260,286. Patented June 27, 1882.



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(No Model.) 3 Sheets—Sheet 2.

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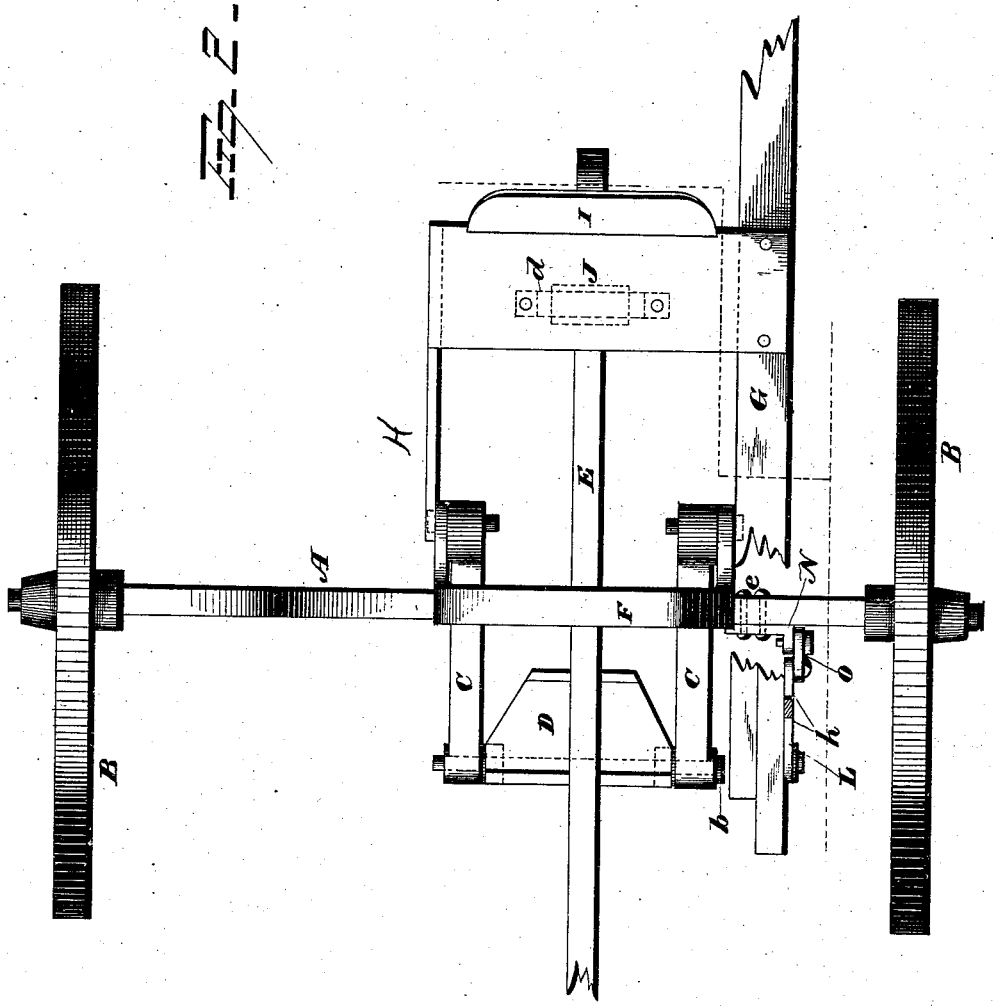
Fig. 2.



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(No Model.)

3 Sheets—Sheet 3.

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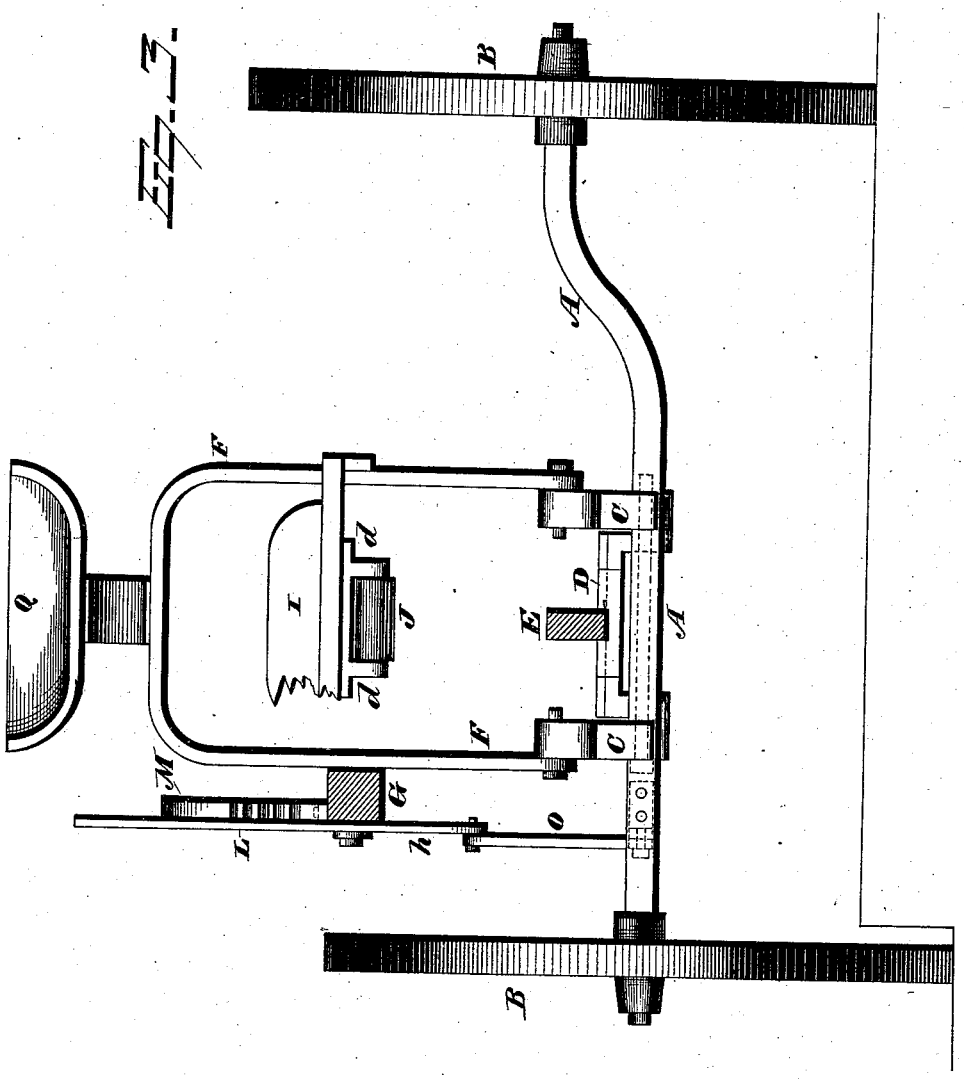

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UNITED STATES PATENT OFFICE.

FREDERICK S. DAVENPORT, OF JERSEYVILLE, ILLINOIS.

WHEEL-PLOW.

SPECIFICATION forming part of Letters Patent No. 260,286, dated June 27, 1882.

Application filed March 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, F. S. DAVENPORT, of Jerseyville, in the county of Jersey and State of Illinois, have invented certain new and useful Improvements in Wheel-Plows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in wheel-plows, the object of the same being to provide means whereby a portion of the weight of the machine, together with the weight of the plowman, shall act as a counterpoise to the plow and plow-beam, and neutralize as much of their weight as may be necessary to render the lifting of the plow easy.

A further object of my invention is to provide a lever and link mechanism that shall give to the driver an increasing purchase over the plow as the latter is lowered deeper within the ground.

With these ends in view, my invention consists in certain details of construction and combinations of parts, as will be more fully explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of a plow embodying my improvement, with the wheel on the mold-board side of the plow removed. Fig. 2 is a plan view of the same with the seat and plow removed, and Fig. 3 is a front view with the plow removed and the tongue and plow-beam in section.

A represents the curved axle, B the wheels, and C the levers, rigidly secured to the said axle at right angles thereto and adapted to project on the front and rear sides thereof. Those portions of the levers C projecting from the rear of the axle A are longer than those portions in front of the axle, and are provided near their outer ends with holes *a*, adapted to receive the spindles *b* of the oscillating table D. This table D, by means of the spindles *b* and holes *a*, before referred to, is pivotally secured to the levers C, and is adapted to receive and retain the plow-beam E thereon, the latter being secured thereto at such a point that the preponderance of weight shall be rearward. To the forward ends of these levers C are adjustably pivoted the lower ends of the arch F, which latter is rigidly secured at one side, about midway its height, to the tongue G, and is provided on the opposite side, in the same horizontal plane as the said tongue, with a brace, H, which latter, together with said tongue G, are adapted to support the foot-rest I, and firmly unite the opposite sides of said arch.

On the under side of the foot-rest I the friction-roller J is pivotally secured in the bearings *d*. This roller J is adapted to form a bearing for the plow-beam as the latter is raised up, which enables the latter to move freely forward as the plow is being elevated without creating any friction, which would retard the motion of the plow or expose the foot-rest to undue wear.

From the foregoing it will be seen that the weight of the plowman, arch, and tongue bears on the short ends of the levers C in front of the axle, and their constant tendency is to depress those ends and elevate the rear ends, to which the plow is secured; but the weight of the plow is such that the combined weight of that portion of the machine above the axle and the plowman is not sufficient to elevate the plow and beam unaided. To overcome this additional weight I have pivoted a bell-crank lever, L, to the tongue G, near the rear end thereof, and provided the same with a spring-actuated catch, *g*, adapted to engage with the segmental rack M, also secured on the tongue G, and hold the said lever in place. When the plow is in the ground the lever L extends in an inclined direction forward, and when it is desired to elevate the plow it is drawn toward the operator instead of moved away from him, and thereby enables the power to be applied more advantageously. The lower or shorter arm, *h*, of the bell-crank L is connected to a link, O, secured to an arm, N, which latter is rigidly secured to the axle. This arm N is rigidly connected to the axle by the bolts *e*, and can be of any desired length. The longer the arm, however, the less will be the power required to turn the axle.

The different parts of the machine being in the position shown in Fig. 1, it will be observed that the plow P and plow-beam E are supported upon the table D at the rear ends of the levers C, while the arch F, seat Q, tongue G, and all the parts attached thereto, as well as the plowman's weight, rest upon the for-

ward ends of the said levers C. It is therefore obvious that the weight of the plow, as well as that of the parts that rise and fall with it, may be neutralized to any required extent, and consequently the power required to lift the plow P is reduced to an amount dependent upon the weight of the plow, the length of the levers C forward of the axle, and the weight thereon. Beyond this, however, power is required to manipulate the plow when in the ground, depending as to amount on the condition of the soil and the depth of furrow.

It will be noted that the plow and plow-beam are so adjusted upon the oscillating table D that the rear end thereof is heavier than the front end, and consequently the front end is lifted first. This brings the upper edge of the forward end of the plow-beam in contact with the roller J, as indicated by arrow. The remainder of the stroke then lifts the rear end of the beam, as indicated by arrow, the front end of the beam at the same time moving forward in contact with the roller J.

In regard to the bell-crank lever L, it will be observed that when the plow is in the ground the angle at which the arm *h* of the bell-crank L and link O stand to each other is very obtuse, and it becomes more so as the plow is lowered deeper into the ground, and to this increase of power is joined the additional leverage of the short arm N, which is rigidly secured to the axle, and to which the lower end of the link O is pivotally secured. The effectiveness of this arm N is decreased as it is turned upward, (as indicated by arrow,) and consequently increased as the plow is lowered to the position shown in the drawings.

Should it be found desirable to reverse the motion of the bell-crank lever L so as to raise the plow by a forward movement, instead of a rearward one, it is only necessary to pivot it upon the tongue at a proper distance forward of the axle, so that the arm *h* shall project rearward.

The front portions of the levers C are each provided with two or more holes to admit of the arch being pivoted nearer to or farther from the axle, as desired, so as to adjust the length of the forward ends of the levers C to the weight of the plowman.

In regard to the axle A, it will be observed, by reference to Fig. 3, that the one shown is simply a four-sided bar, bent so that the land-wheel is eccentrically journaled to the main length of the axle to an amount about equal to the depth of an ordinary furrow. When the axle is turned to such a position that the plow is raised to its full height, the direction of the eccentricity is forward instead of upward, and consequently the machine stands level when the wheels B are on level ground.

The eccentricity given to the land-wheel may, if desired, be divided between the two wheels, half to each, in opposite directions.

The operation of my machine is as follows: The plowman takes hold of the lever L, and, after unlocking it, pulls it toward him in the direction of the arrow. This movement thrusts the tongue G and its connected parts downward, as indicated by arrows. The effect of this is to depress the forward ends of the levers C, and consequently raise the opposite ends, and with them the plow P, and at the same time turn the axle. In this operation it will be observed that the plowman is assisted by his own weight and that of the parts of the machine that descend with it, and their downward tendency is converted into an upward tendency of the plow and beam.

Instead of constructing the levers C, as described, the axle A can be curved so as to form the rear ends thereof, and the front ends can be formed by welding or otherwise securing pieces to the axles at the points where they bend backward to form the support for the plow.

It is evident that numerous changes in the construction and arrangement of my plow might be resorted to without departing from the spirit of my invention, and hence I would have it understood that I do not limit myself to the exact construction of parts shown and described, but consider myself at liberty to make such changes as come within the spirit and scope of my invention.

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

1. In a wheel-plow, the combination, with an axle and wheels loosely mounted thereon, of levers secured rigidly to said axle and supporting at their rear ends an oscillating table upon which the plow-beam rests, and secured at their forward ends to the seat-arch, a tongue arranged on one side of said arch, and a brace arranged at the opposite side of the arch, a foot-rest secured upon said tongue and brace, and an anti-friction roller mounted in bearings on the under side of the foot-rest, substantially as set forth.

2. In a wheel-plow, the combination, with the axle A, wheels B, levers C, arm N, table D, and beam E, of the arch F, seat Q, tongue G, lever L, catch *g*, rack M, and link O, all of the above parts constructed and adapted to operate substantially as and for the purpose set forth.

3. In a wheel-plow, the combination, with axle A, wheels B, levers C, arm N, table D, and beam E, of the arch F, seat Q, tongue G, lever L, foot-rest I, and roller J, all of the above parts being constructed and adapted to operate substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of March, 1882.

FREDERICK S. DAVENPORT.

Witnesses:
I. W. CALHOUN,
WM. J. KINGSLEY.