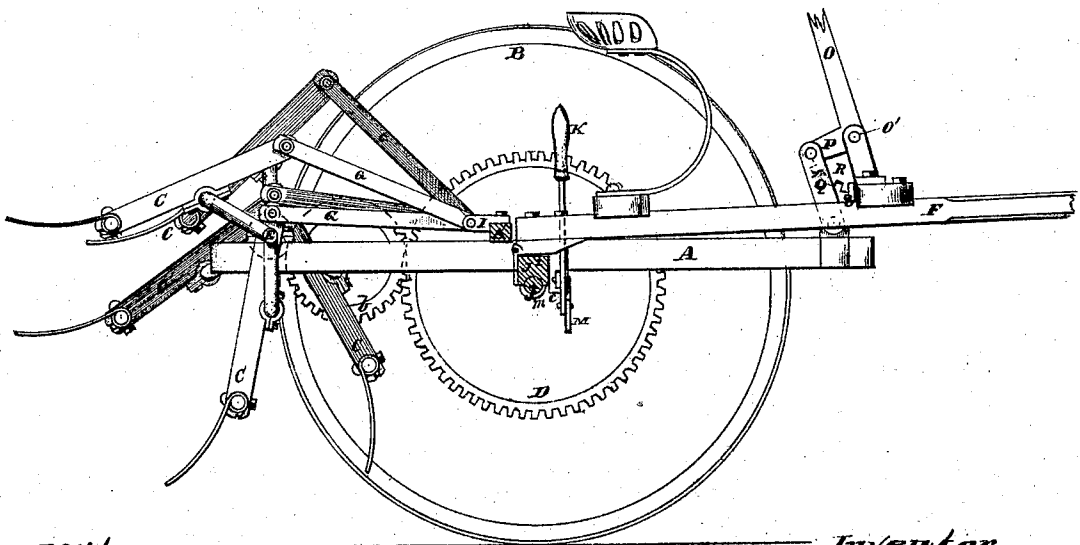
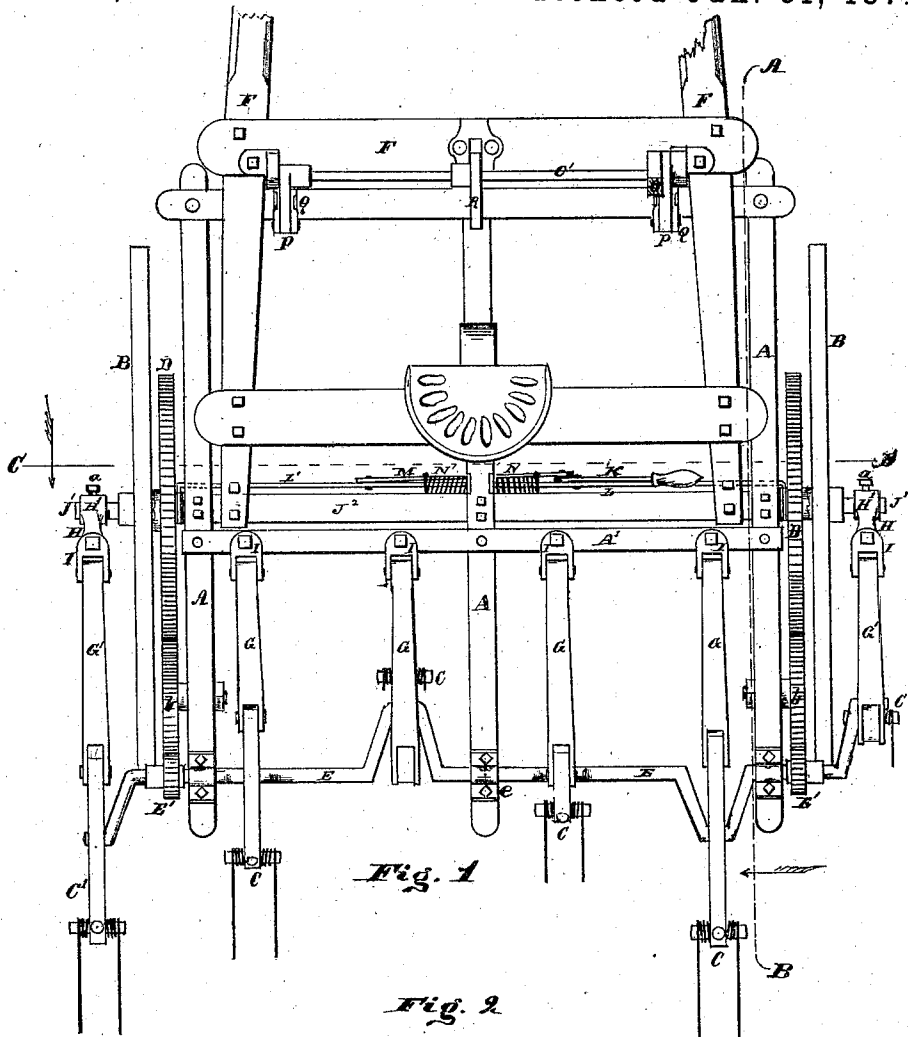


E. W. BULLARD.

Hay Tedder.

No. 111,314.

Patented Jan. 31, 1871.



Witnesses

Thos H. Dodge,
A. E. Pierce.

Inventor

Ezekiel W. Bullard

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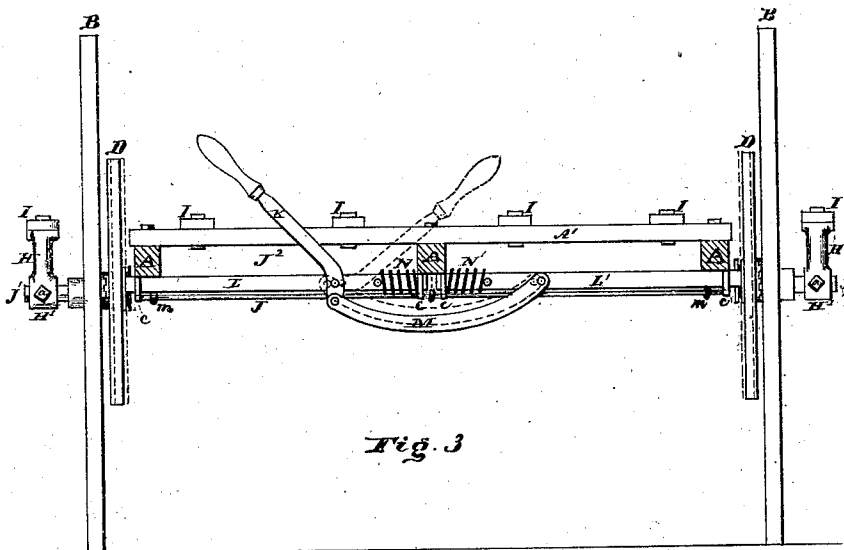


Fig. 3

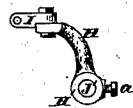


Fig. 4

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EZEKIEL W. BULLARD, OF BARRE, MASSACHUSETTS.

Letters Patent No. 111,314, dated January 31, 1871.

IMPROVEMENT IN HAY-TEDDERS.

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, EZEKIEL W. BULLARD, of Barre, in the county of Worcester and State of Massachusetts, have made certain new and useful Improvements in Hay-Tedders; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a plan view of my improved hay-tedder;

Figure 2 represents a vertical section at line A B, fig. 1; and

Figure 3 represents a section at line C D, fig. 1.

The sections are shown looking in the direction indicated by arrows on the respective lines.

Figure 4 represents a side view of one of the supporting-arms at the outside of the traveling-wheels.

The nature of my invention consists in certain improvements in hay-tedders, as hereinafter described.

In the drawing—

The parts marked A represent the frame;

B B, the traveling-wheels;

C, the stirring-forks;

D, the driving-gears;

E, the crank-shafts; and

F F, the thills, all of which parts may be constructed substantially in the ordinary manner, and therefore need not be more fully described.

The crank-shafts E extend beyond the traveling-wheels, as shown, and a stirring-fork, C', is arranged at each side of the machine, at the outside of the traveling-wheels, so that the width of the working portion of the machine is greatly increased without setting the wheels at too great a distance from each other.

The fork-levers are held at their upper ends by swing-bars G, the front ends of the latter being pivoted in ear-pieces I, as indicated.

The ear-pieces for the central swing-bars are bolted to the cross-bar A' of the frame, while those for the outer swing-bars G' are secured to arms H, attached to the projecting ends J' of the axle.

The arms H are made with an upward and backward curve, so that the ear-pieces I attached to their upper ends will be in line with those secured to the cross-piece A'.

The arms H are provided with hubs H', which slip over the ends J' of the axle, where they are secured in proper position by set-screws a, so that they can be readily taken off when it is desired to remove the wheels.

The axle is formed of a round bar of metal, J, secured to the lower side of a wooden frame-piece, J², by means of loops or staples m, as indicated, the

metal bar J being set into the wood J² for one-half of its size.

The ends of the metal portion of the axle extend beyond the wood part far enough to form supports for the wheels B and gears D, with a sufficient portion of their ends J' outside the wheels to form the bearings for the arms H.

The crank-shafts E are connected for operation to the driving-gears D by means of the intermediate gears b and pinions E', in the ordinary manner, their ends being supported by a common bearing, e, on the center-piece of the frame A.

The hubs of the driving-gears D are provided with clutches at their outer sides, which mesh with corresponding clutches at the inner side of the traveling-wheels.

These clutches are thrown into and out of clutch by moving the gears D out and in, by means of the shipping-lever K, in connection with the slide-bars L L'.

The slide-bars L L' are supported in bearings c at the lower side of the frame A, and the outer ends of said bars are bent at a right angle, and arranged in grooves formed around the hubs of the gears D, so that the action of the bars will move the gears.

The shipper-lever K is pivoted, at a short distance from its lower end, to the right-hand slide-bar L, while its extremity is joined to the left-hand slide-bar L' by means of the link M, as shown in fig. 3 of the drawing.

By swinging the handle of the shipper-lever K to the right, as indicated in full lines, fig. 3, the gears D are moved outward, and their clutch-teeth caused to engage with the clutches on the wheels B.

Coiled springs N N' are arranged at the inner ends of the slide-bars L L', as shown, which press the bars outward, for the purpose of holding the clutches in mesh.

When the shipper-lever is thrown back, as indicated by dotted lines, fig. 3, the bars L L' and gears D are drawn inward and the clutches disengaged.

The lower end of the lever K is made curved, as shown, so that when thrown back it carries the end of the link M past its pivot-center, and thereby holds the bars L L' and lever K in position.

The frame A can be raised and depressed, to adjust the height of the forks C C', by means of a hand-lever, O, at the front of the machine.

The lever O is attached to a transverse shaft, O', which is supported in suitable bearings on the cross-bar F' of the thills F.

Arms P' project backward from the shaft O', to which the forward end of the frame A is joined by links Q, as indicated.

A notched segment, R, is secured to the central

part of the shaft O', and the elevating device can be held in any adjusted position by means of a latch-spring, S, which springs into one of the notches on the segment R, thereby retaining the parts securely in place. By pressing down the latch-spring S the segment is released, when the lever O can be operated.

Having described my improvements in hay-tedders,
What I claim therein as new and of my invention,
and desire to secure by Letters Patent, is—

1. The combination, with the ends J¹ of the main axle, of the supporting-arms H H, substantially as and for the purposes set forth.

2. The combination, with the slide-bars L L', of the link M and shipper-lever K, substantially as and for the purposes set forth.

EZEKIEL W. BULLARD.

Witnesses:

THOS. H. DODGE,
A. E. PEIRCE.