2 Sheets—Sheet 1.

E. W. BULLARD.

Hay Tedder.

No. 111,314. Patented Jan. 31, 1871.

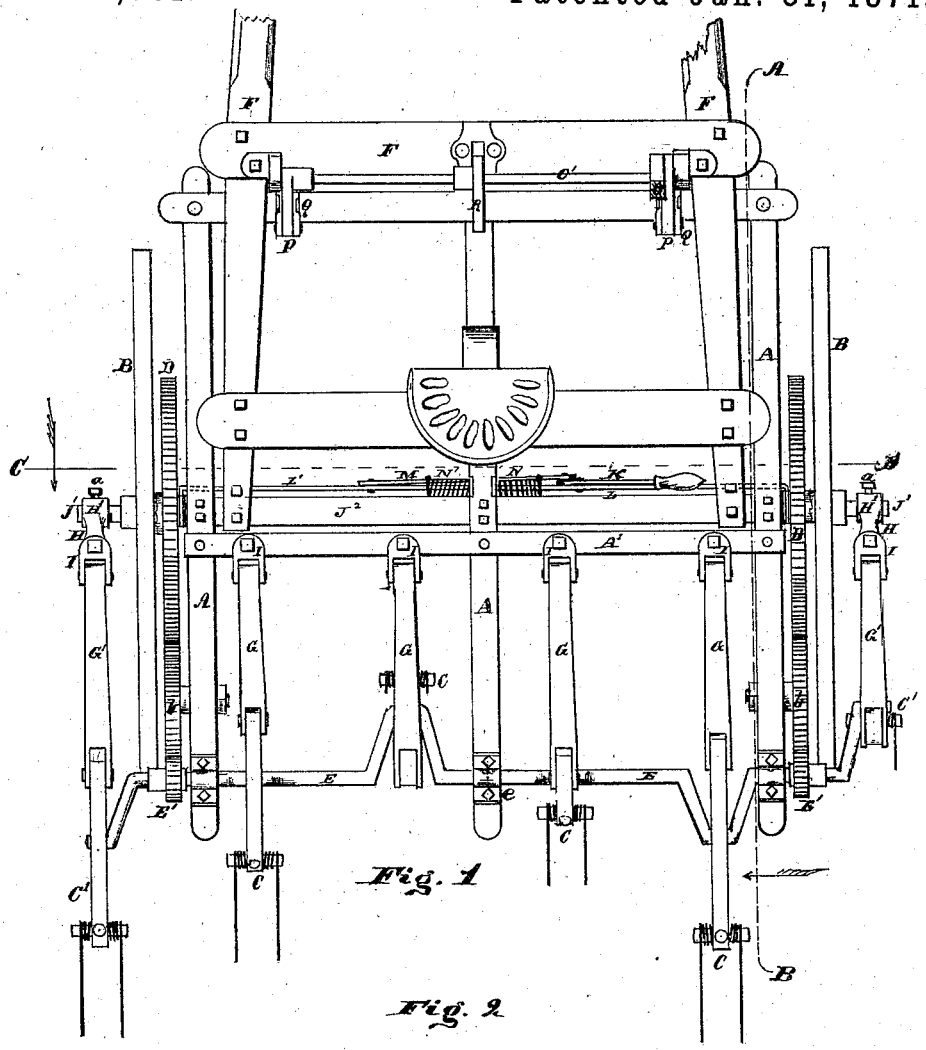
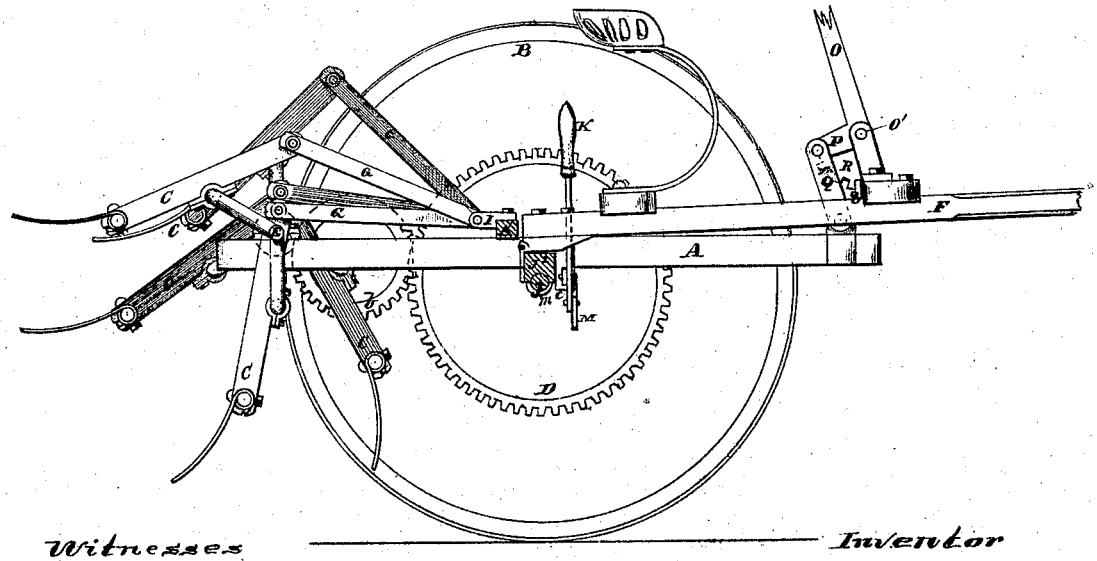


Fig. 1

Fig. 2



Witnesses
Thos. H. Dodge,
A. E. Peirce.

Inventor
Ezekiel W. Bullard

2 Sheets—Sheet 2.

E. W. BULLARD.

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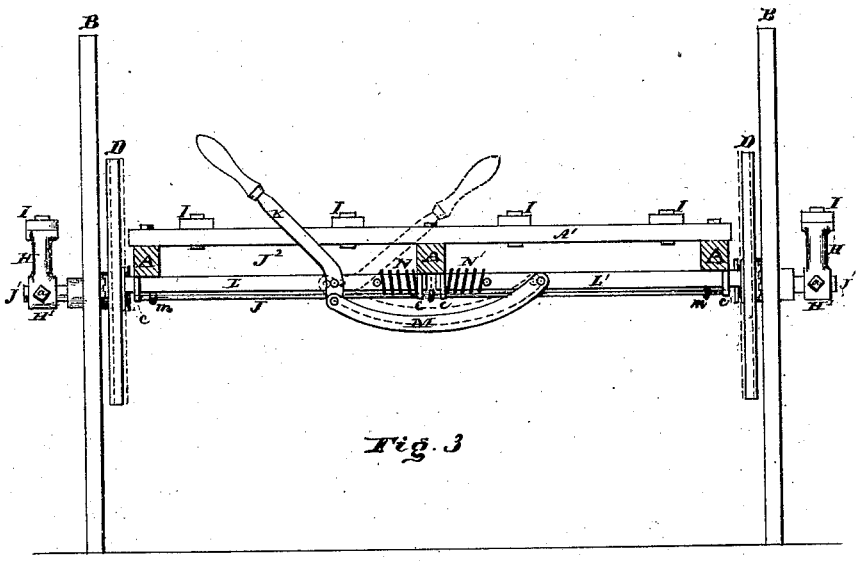

Fig. 3

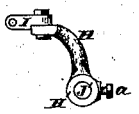

Fig. 4

Witnesses
Thos. H. Dodge
A. E. Pierce

Inventor
Ezekiel W. Bullard

United States Patent Office.

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^1 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^1 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, J^2, by means of loops or staples *m*, as indicated, the metal bar J being set into the wood J^2 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^1 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 J^1 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.