

(Model.)

2 Sheets—Sheet 1.

D. BERLEW & M. L. KISSELL.
CULTIVATOR.

No. 260,447.

Patented July 4, 1882.

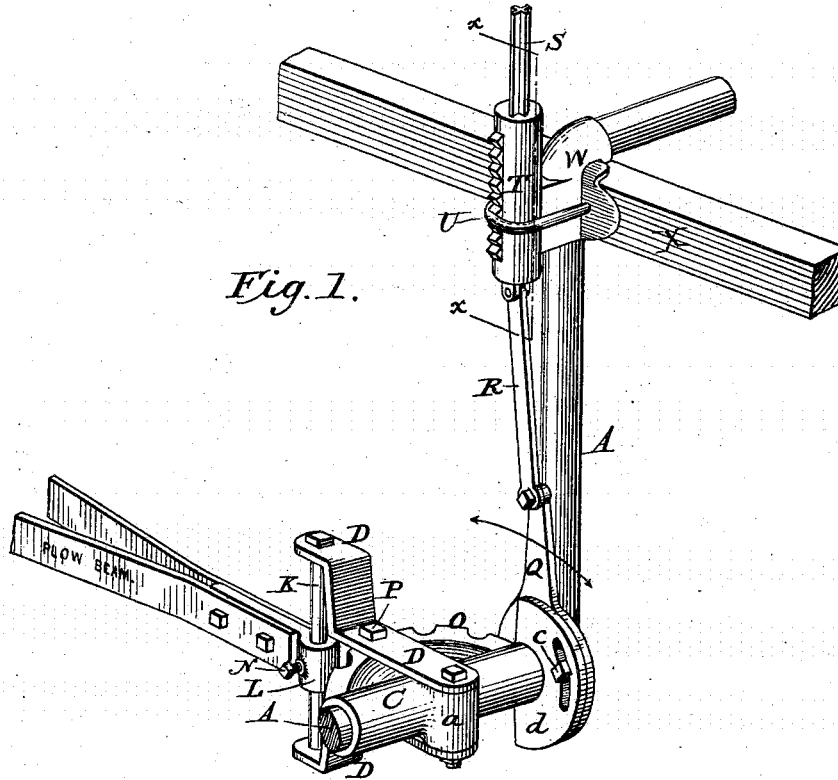


Fig. 1.

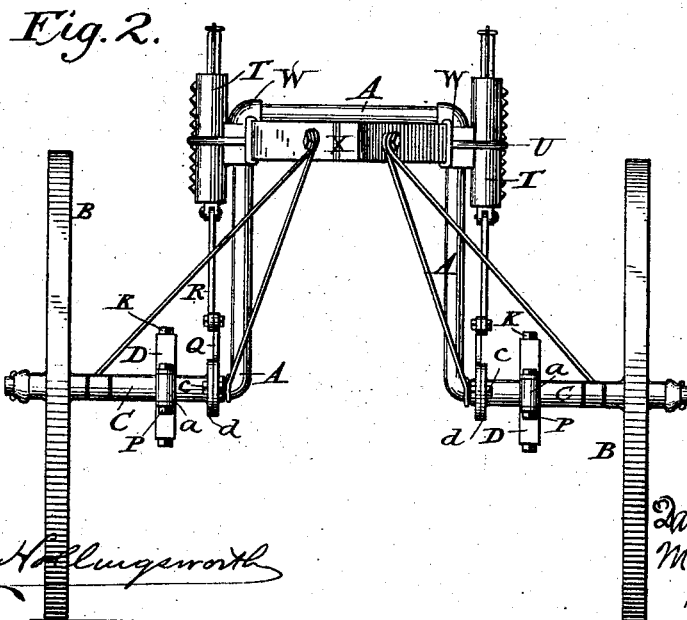


Fig. 2.

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Philip T. Dodge

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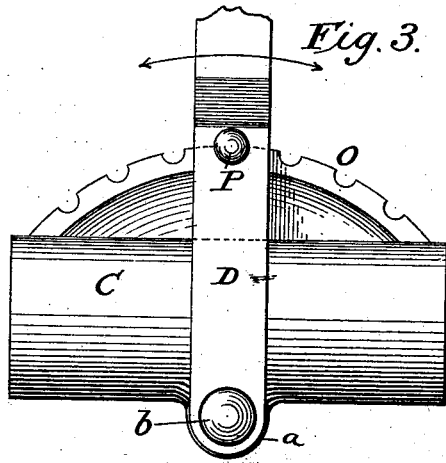


Fig. 3.

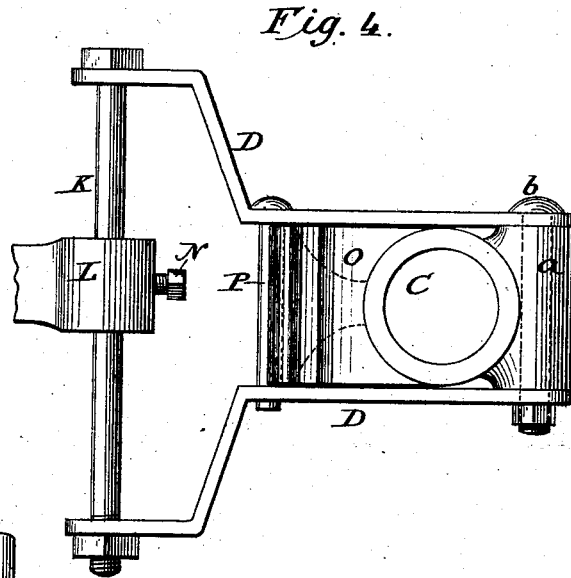


Fig. 4.

Fig. 5.

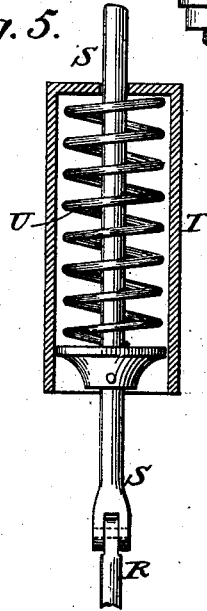


Fig. 6.

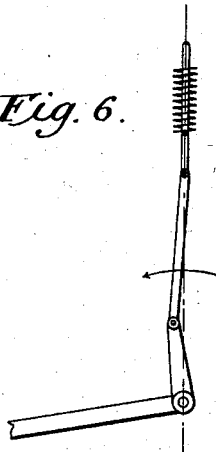
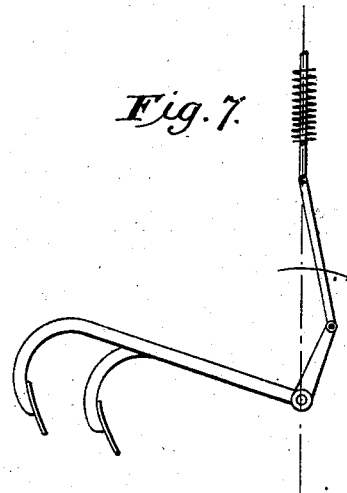


Fig. 7.



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UNITED STATES PATENT OFFICE.

DANIEL BERLEW AND MARTIN L. KISSELL, OF SPRINGFIELD, OHIO, ASSIGNORS TO P. P. MAST & COMPANY, OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 260,447, dated July 4, 1882.

Application filed April 14, 1882. (Model.)

To all whom it may concern:

Be it known that we, DANIEL BERLEW and MARTIN L. KISSELL, of Springfield, in the county of Clarke and State of Ohio, have invented certain Improvements in Cultivators, of which the following is a specification.

Our invention relates to that class of machines now in general use, wherein the shovels or teeth are attached to beams or drag-bars which are jointed at their forward ends to the draft-frame in such manner as to permit their rear ends to swing both vertically and horizontally.

The first improvement consists in a spring attachment serving, at the will of the operator, to hold the beams down in an operative position, or to assist in lifting them out of action. This attachment consists essentially in an arm or coupling connected by a pitman to a sliding rod which is mounted in a guide and urged downward by a spring.

The second improvement is designed to permit the beam or drag-bar to be adjusted laterally at its forward end; and it consists in connecting the beam to the coupling-sleeve or equivalent by a laterally-swinging link, and in minor features hereinafter specified.

Although applicable to machines of different styles, our improvements are more particularly designed for use on straddle-row machines such as are now in common use, and it is to this class that the machine shown in the drawings belongs.

Referring to the accompanying drawings, Figure 1 is a perspective view of one side of the machine with our improvement applied, the ground-wheel being removed to expose the other parts to view. Fig. 2 is a front elevation of the machine. Figs. 3 and 4 are respectively a plan view and a side view of the coupling-head. Fig. 5 is a section on the line *xx*, Fig. 1. Figs. 6 and 7 are diagrams illustrating respectively the depressing and the lifting action of the spring attachment.

A represents the ordinary axle, having its central portion arched upward and its ends extended horizontally to receive the ground-wheels B.

On each end of the axle there is mounted a loose revolving sleeve or box, C, provided with

a hub or boss, *a*, designed to receive a vertical pivot or journal, *b*. This pivot connects to the sleeve a horizontal link or clevis, D, which straddles or embraces the sleeve and extends backward beyond the same, as shown, the link being thus compelled to turn with the sleeve in its revolution, but permitted to swing laterally in relation thereto. The link D has the rear ends of its arms curved or bent widely apart to admit a long vertical rod, K, by which they are connected, this rod being preferably arranged to revolve freely.

Upon the rod K there is mounted a head or jaw, L, secured rigidly to the forward end of the shovel-beam or drag-bar. The head or jaw L is movable vertically upon the rod, and is secured by means of a screw, N, or equivalent fastening.

In order that the link D may be adjusted laterally and fixed in the position required, the sleeve C is provided on the rear side with a notched or perforated flange or plate, O, with which the link is connected by a vertical pin, P. By changing the pin from one to another of the notches the link may be adjusted to give the exact distance designed between the two beams of the machine. The horizontal movement of the beam takes place on or around the rod K, which is held firmly against side play by the link D.

It will be observed that the connections shown compel the beam to swing vertically as the sleeve and link turn forward, and vice versa.

On the inner end of the sleeve there is a slotted flange, *d*, to which an upright arm, Q, is rigidly connected by a bolt, *e*, or equivalent fastening. The arm Q is preferably mounted loosely around the axle, in order that it may be the more securely sustained, but it may be bolted to the sleeve without bearing on the axle. The upper end of the arm Q is pivoted to the lower end of a pitman, R, which is in turn pivoted at its upper end to the lower end of a vertical sliding rod, S. The rod S passes through and is guided by a vertical cylindrical case, T, bolted rigidly to the side of the frame X.

Within the case T there is mounted a strong spiral spring, U, which surrounds the sliding rod and bears at the upper end against the interior of the case, while at the lower end it

bears on a collar or flange upon the sliding rod, as clearly represented in Fig. 5. The flange or collar fitting within the case serves to prevent the rod from vibrating laterally, compelling it to slide upward and downward in a right line within the case. The spring exerts a strong downward pressure upon the rod, which in turn exerts a corresponding pressure through the intermediate pitman upon the upper end of the coupling-arm Q.

The rod S and the coupling head or sleeve are located in substantially the same vertical plane, and the parts adjusted in such relation to each other that when the beam is in an operative position the pitman R will have a slight tendency to force the arm Q backward, and thereby hold the beam and shovels down in their operative positions, as indicated by the diagram, Fig. 6. In the act of elevating the beam the coupling sleeve and arm Q are turned forward and the pitman R immediately thrown into such position in relation to the arm that the downward pressure of the pitman tends to urge the arm forward, as indicated in Fig. 7, thereby elevating or assisting the operator to elevate the beam.

It will be readily understood that as long as the arm Q and the two ends of the pitman stand in line or substantially in line with each other the attachment has no appreciable tendency to move the beam either upward or downward, but that the attachment will exert a depressing or a lifting action according as the lower end of the pitman is carried to the rear or front of a line drawn from the upper end of the pitman to the axis of the sleeve. The bolt *c* and slotted flange *d* admit of the arm Q being adjusted forward and backward with reference to the coupling-sleeve. In this manner the attachment may be adjusted to change its action when the shovels are at any given point. Thus the device may be adjusted to urge the beams into the ground with a greater or less pressure and to a greater or less depth, as may be required.

While it is preferred to retain the construction represented in the drawings in all essential features, it is manifest that the details may be modified without changing materially the mode of action. The form of the guide T, within which the rod and spring are mounted, may be modified. The arm Q may be attached rigidly to the coupling-sleeve and the beam be connected directly to the coupling C by a vertical pivot or journal, as usual, it being obvious that the operation of the spring attachment is in no wise dependent upon or affected by the lateral adjustment of the beam.

It is preferred, as shown in Fig. 1, to connect the cylindrical guiding-case T to the arched axle and to one of the draft-bars W by means of a staple, bolt, or stirrup, U.

It is evident that the guide for the rod may be constructed in any suitable manner which will prevent the rod from playing sidewise, and also that the rod, spring, and pitman may be

used in connection with any suitable draft-head having an upright arm, Q, thereon—draft-heads of various forms having the arm thereon being now well known in the art.

On reference to Figs. 1 and 2 it will be seen that the case or guide T is provided on the outer side with a series of notches at different heights, to receive the fastening bolt or stirrup, this construction permitting the case to be adjusted vertically in order to vary the tension of the spring. It will also be seen in the same figures that the sleeve is seated in and sustained by a block or casting, W, which is adapted to fit over and around the axle A, and provided in the outer side with a concavity to receive the case or body. The casting W is made with flanges or ears, which are adapted to fit against the tongue or frame, and provided with holes through which the arms of the clamping-bolt or staple pass, as shown. The casting thus constructed and applied serves to secure the several parts firmly in the proper relations to each other. The rod S is made of an angular or irregular form in cross-section, and the opening in the case or body through which the rod slides made of corresponding form, whereby the rod and pitman are prevented from turning or twisting in such manner as to cause a cramping or binding of the joints.

We are aware that a coupling has been provided with an arm connected to one end of a rod, the opposite end of which latter is provided with a spring and arranged to slide through a fixed guide or bearing, as first shown in the patent to Elder, No. 222,391. In our machine the vibrating rod is connected to a rod which is mounted in fixed guides and around which the spring is seated, whereby an improved action of the parts is secured.

Having thus described our invention, what we claim is—

1. The combination of the plow-beam, the rotary draft device to which it is connected, the arm attached to said device, the pitman jointed to the arm, the sliding rod mounted in a guide and jointed at one end to the pitman, and the spring upon said rod tending to depress the same, as described and shown.

2. In a cultivator, the combination of the axle, the coupling head or sleeve, journaled loosely upon the axle and provided with an upright arm, a vertically-sliding rod mounted in a guide upon the main frame and connected by a pitman with the upright arm, and the spiral spring applied to urge the sliding rod downward, substantially as described and shown.

3. In a cultivator, the combination of the rotary coupling or draft head, having the upright arm Q adjustably attached thereto, the pitman R, the vertically-sliding rod S, the cylindrical case surrounding the rod and secured rigidly to the frame, and the spiral spring mounted within the case and acting to depress the rod, as described and shown.

4. In a spring attachment for cultivators, the combination of the axle, the draft-bar X, and the spring-sustaining guide T with the stirrup U, applied, as shown, to unite both the guide and the axle with the draft-bar.

5. In a cultivator, the combination, with the rotary coupling-head C and the plow-beam, of the draft-link pivoted vertically to the coupling-sleeve and to the beam, and means, substantially as shown, for securing the link against lateral play upon the sleeve.

6. The coupling-sleeve provided with the curved flange o, in combination with the draft-link, pivoted vertically at one end of the sleeve and arranged to swing laterally in relation thereto, the plow-beam pivoted vertically to the rear end of the link, and the fastening-pin P, connecting the link and coupling, as shown, whereby the beam may be adjusted laterally and fixed in position without being disconnected from the coupling.

7. In a cultivator, the laterally-adjustable draft-link, pivoted vertically at its forward end

to the draft device and adjustable laterally by a swinging motion, as described, in combination with the vertical rod K, mounted in the rear end of the link, and the plow-beam adjustable vertically on said rod, as described.

8. In combination with the beam, its arm, and the connecting-rod, the spring, and the spring-sustaining case, adjustable vertically, substantially in the manner described and shown.

9. In a wheeled cultivator, the beam-lifting spring, arranged to operate substantially as described, in combination with the supporting-case T, provided with notches, and a stirrup, U, serving to secure the case in position and admit of its being adjusted vertically to vary the force of the spring.

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Witnesses:

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C. C. KIRKPATRICK.