No. 627,048. Patented June 13, 1899.

C. D. CARTER

CULTIVATOR.

(Application filed July 9, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

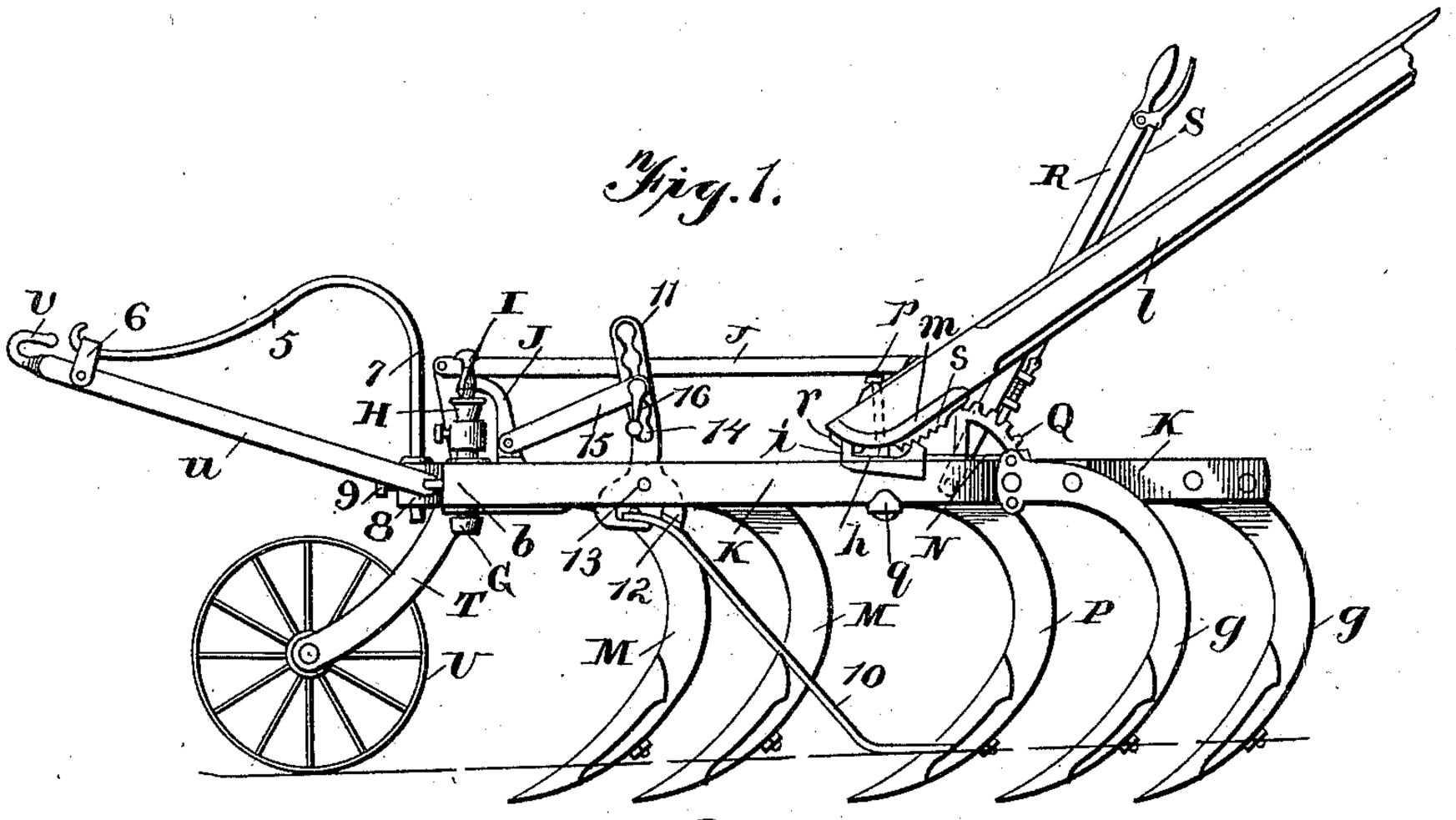


Fig. 3.

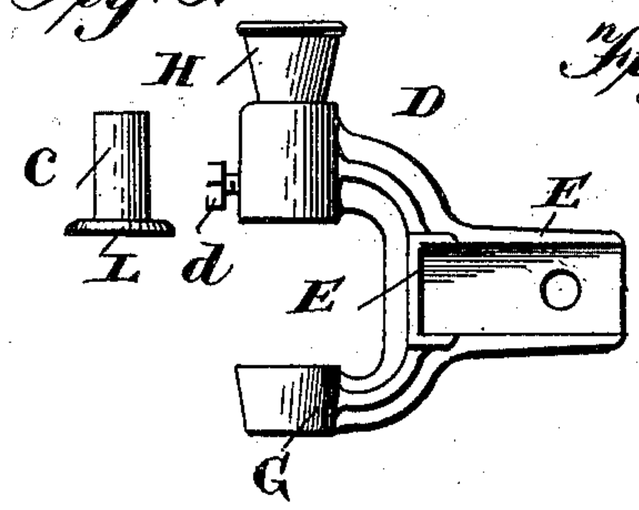


Fig. 4.

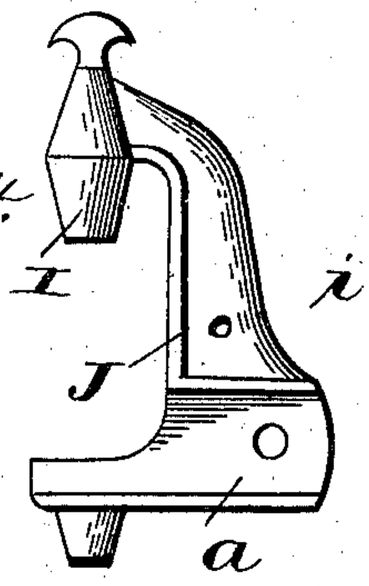


Fig. 7.

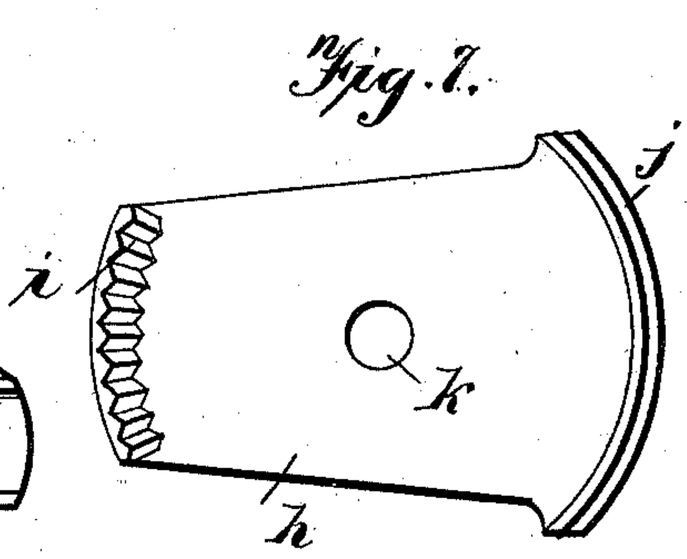


Fig. 5.

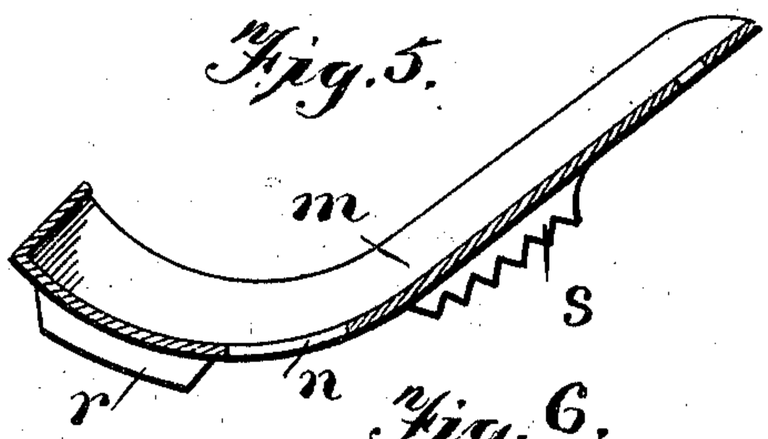


Fig. 6.

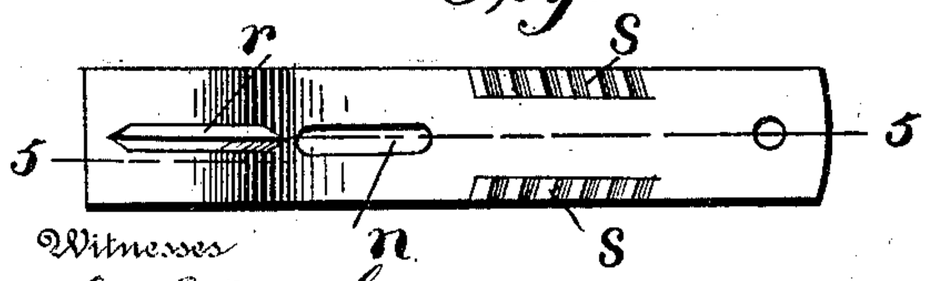
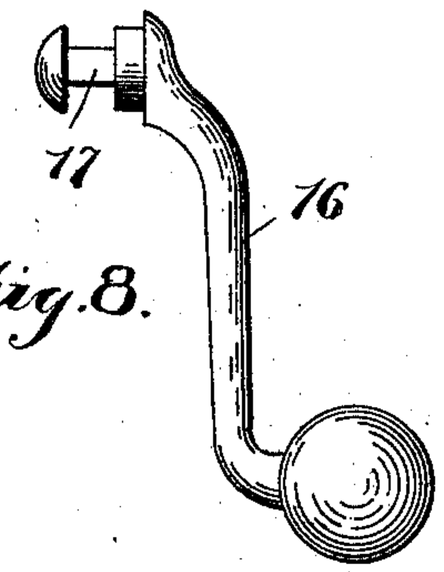


Fig. 8.



Witnesses
Geo. E. Frech.
B. E. Seitz

Inventor
Charles D. Carter,
by A. S. Pattison
Attorney

No. 627,048.

Patented June 13, 1899.

C. D. CARTER.

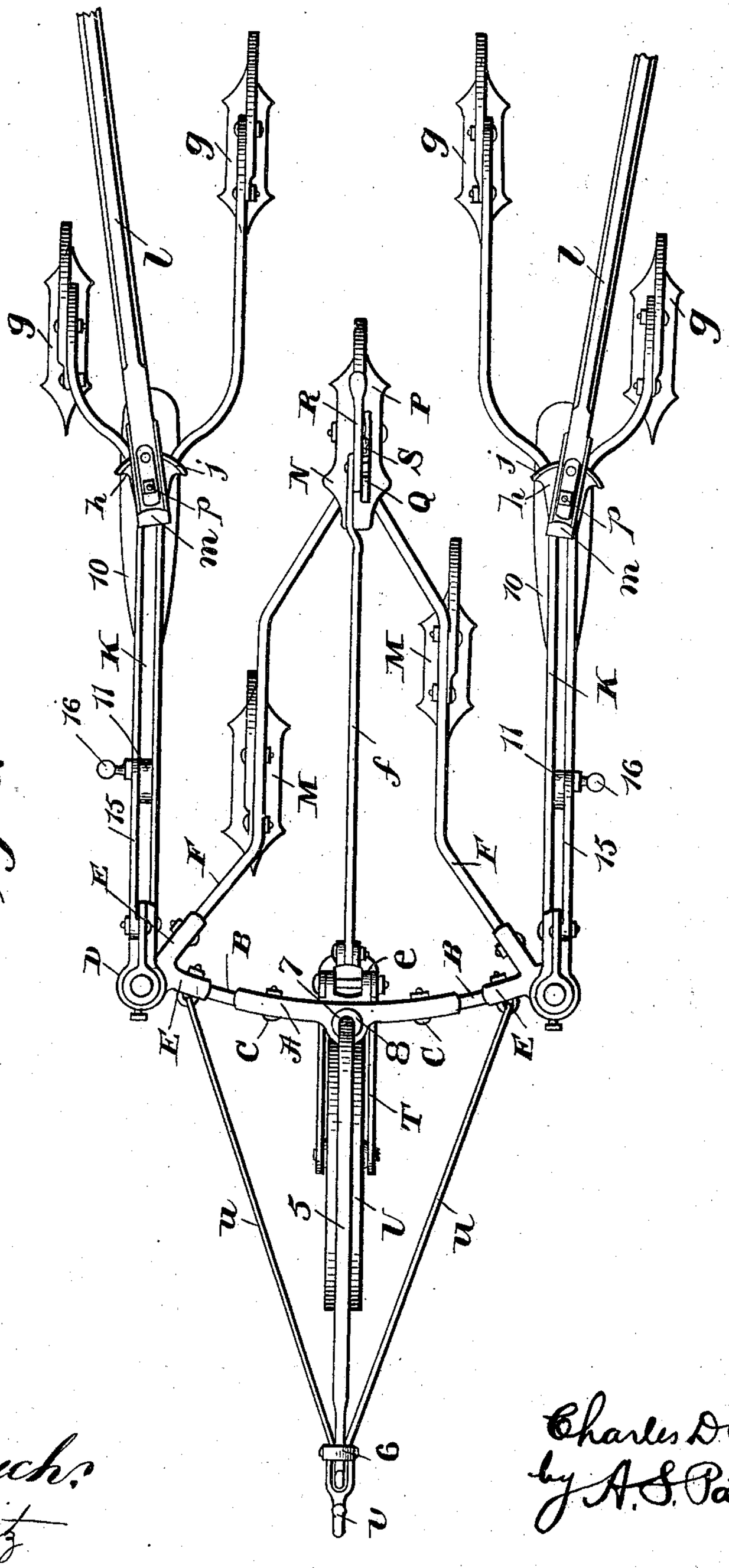
CULTIVATOR.

(Application filed July 9, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.



Witnesses
Geo. E. Finch.
B. E. Seitz

Inventor
Charles D. Carter
by A. S. Pattison,
Attorney

UNITED STATES PATENT OFFICE.

CHARLES D. CARTER, OF SPRING ARBOR, MICHIGAN.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 627,048, dated June 13, 1899.

Application filed July 9, 1898. Serial No. 685,556. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. CARTER, a citizen of the United States, residing at Spring Arbor, in the county of Jackson and State of Michigan, have invented new and useful Improvements in Cultivators, of which the following is a specification.

My invention relates to improvements in cultivators, and pertains to a cultivator having a rigid central portion and two side pivoted beams, all of which will be fully described hereinafter and particularly pointed out in the claims.

The primary object of my invention is to provide a cultivator having a vibrating central portion and two rearwardly-extending beams pivoted at their forward ends to said central vibrating portion, the beams having freely-swinging rear ends carrying cultivator-teeth, the central portion having a centrally-arranged support and a centrally-arranged draft connection whereby the central portion will freely vibrate when the teeth of one of the beams meets an obstruction and without disturbing the relative position of the beam cultivator-teeth to the rows or hills being cultivated and without subjecting the operator to the annoying sudden lateral jerks incident to a cultivator which is not provided with a freely-vibrating central portion which receives the jerks instead of the beams which carry the handles. This free vibration of the central portion is accomplished by having the pivoted freely-swinging beams and a central draft connection for the central portion.

Another object of my invention is to provide a cultivator having a head portion carrying a supporting-wheel and rearwardly-extending beams adapted to be adjustably but firmly attached thereto to regulate the distance between the beams to suit the width or space between the rows being cultivated.

Another object of my invention pertains to a particular construction for regulating or adjusting the handles of the movable beams.

Another object of my present invention pertains to the particular construction of the pivotal connections between the swinging beams and the rigid front portion of the cultivator.

My invention also relates to the specific construction and arrangement of parts, which will be fully illustrated and described.

In the accompanying drawings, Figure 1 is a side elevation of a cultivator embodying my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a detail view of the pivotal coupling carried by the head or rigid portion of the cultivator. Fig. 4 is a similar view of the coacting coupling which is attached to the pivoted beams. Fig. 5 is a detached view of the plate connected to the under side of the handle-bars. Fig. 6 is an inverted view of the same. Fig. 7 is a detached view of the plate to which the handle-bars are adjustably connected. Fig. 8 is a detail view of the locking-lever for the shoe.

Referring now to the drawings, A indicates a head portion of the cultivator, to opposite ends of which plates B have their inner ends adjustably connected, the said plates being provided with elongated or horizontal slots, through which clamping-bolts C pass, by means of which the plates B may be adjusted upon the head A. These plates and the head are preferably provided with interlocking notches or projections to prevent the slipping of the parts when they have been clamped together.

Connected to the opposite and outer ends of the plates B are pivotal couplings D, which are provided with the two projecting stems E, one adapted to be clamped to the outer end of the plate B, as before stated, and the other adapted to receive the forward end of the rigid beam F, as clearly illustrated in Fig. 2. These pivotal couplings D are provided with the lower sockets G and the upper sockets H, and these sockets receive the cones I, formed upon a coupling J, which is carried by the forward ends of the pivoted beams K. These pivoted beams K preferably consist of two parallel bars, as shown in Fig. 2, their forward ends being clamped to opposite sides of the coupling J in the recesses *a*. The forward ends of these bars forming the beams K project inward, as shown in Fig. 1, under the upper socket H, as shown at *b* in Fig. 1. The upper socket H is constructed to have its upper end receive the upper cone I of the coupling J and its lower end to receive the stem *c* of the cap L. This cap L is vertically

adjustable within the socket H and held in its adjustment through the medium of a clamping-screw *d*. The object of this construction is to enable the cap L to be lowered upon and engage the projecting ends *b* of the beams K to hold the cones I against jumping out of the sockets and to prevent any wabbling of the beams by engaging their upper surfaces, as will be readily understood. Another function of this construction is that as the cones and their sockets become worn, and consequently move downward, the cap L is lowered so that it is always in contact with the upper face of the projecting end *b* of the beams K, thus preventing them from being loose and wabbling, as would otherwise be the case.

Connected to the sides of the rearwardly-extending central rigid beams or drag-bars F are the cultivator-teeth M, the rear ends of these drag-bars F being attached together and provided with a plate N. Clamped between the ends of these beams or drag-bars F is a cultivator P, cultivators M and P serving to cultivate the center space between two rows of the plants being cultivated. The plate or connection N carries a segment Q, and to which is also pivoted a lever R, the said lever, provided with the ordinary ratchet mechanism S, by means of which it is held in its desired adjustment.

A lever T carries at its forward and lower end a wheel U, which serves to regulate the depth at which the cultivator-teeth shall run in the soil. This lever is pivotally connected intermediate its ends to rearwardly-projecting lugs *e*, formed as a part of or carried by the head A, and the upper end of the lever T is connected by means of a link or pitman *f* to the lever R, by means of which the wheel may be raised and lowered in respect to the head A, thus enabling the operator to cause the cultivator-teeth to cut shallow or deep, as may be desired.

The rear ends of the beams K diverge, as shown, and each carries a cultivator-tooth *g*, preferably one in advance of the other, as illustrated in Fig. 2. At the junction of the diverging portions of these beams K a plate *h* is placed on their upper edges, the said plate having at its forward edge a segmental series of notches *i* and at its rear edge a projecting flange *j*, formed on the arc of a circle drawn from the pivotal opening *k*. The handles *l* have their lower and forward ends curved, as shown, to receive the curved casting *m*, the curved casting having an elongated opening *n*, through which a clamping-bolt *p* passes, the said bolt also passing through the handle itself. The lower end of the bolt passes through a casting *q*, situated at the under side of the beam K. The under side of the casting *m*, attached to the handle, is provided at a point in front of the opening *n* with a pin *r*, adapted to engage the notches *i* of the plate *h*, and with a longitudinal series of notches or projections *s*, adapted to engage the flange *j* of the plate *h* to permit of a longitudinal adjustment of the handle. The pin *r* and the projections *i* of the plate *h* permit the handle-bar to have a rotary or horizontal adjustment. By means of this construction the handles are permitted to have a longitudinal adjustment which will raise or lower their rear ends and permitted to have a horizontal adjustment which will bring the handles nearer together or farther apart, as may be desired by the user. The clamping-bolt *p* serves to clamp the handle and the plate all together to the beams, as clearly illustrated.

From the above description it will be seen that by the adjustment of the plate or bars B upon the head A the distance between the beams K may be regulated, as desired, to suit the width of space between the rows of plants being cultivated and that the cultivators carried by the beams K can be moved in or out to follow close to the adjacent sides of the rows of the plants, whereby the whole space between the rows is cultivated at the same time and by passing but once between the rows, which is a great saving in time over cultivating but one side of the space between the rows at a time.

The draft-bars *u* have their rear ends loosely connected with the pivotal couplings D in any suitable manner and their forward ends connected and provided with a hook *v* for the draft attachment. The draft-bars *u* are supported through the medium of a forwardly-projecting rod 5, having its forward end passing through a loop 6, carried by the forward end of the draft-bar *u*, and its rear vertical end 7 seated in a vertical socket 8, formed upon the head A, the said rod 5 being held in the desired vertical adjustment through the medium of a clamping nut or bolt 9. By means of this construction the forward ends of the draft-bar *u* can be raised or lowered, as desired, and in this way the depth at which the rear cultivator-teeth enter the soil is to a considerable extent regulated, as will be readily understood by those skilled in the art. For instance, the higher the draft-bars are raised the shallower will the rear cultivators enter the soil, and vice versa, owing to the fact that the front end of the draft-bar *u* is at a point in front of the journal of the wheel U, so that downward pull thereon tends to lift the rear end of the cultivator-teeth.

By means of a cultivator as above described an operator is enabled to cultivate the whole space between two rows of plants and also to cultivate closely to the plants through the medium of the pivoted beams, all at a single passage between two rows of the plants.

In order to regulate the depth at which the rear cultivators shall run in the soil, I provide a shoe 10, which has its upper end pivoted in the lower end of a casting 11, the said casting 11 having an elongated surface 12, which will permit the shoe to swing as the

beams are moved back and forth. This plate 11 is hinged to the beams at the point 13 and has an elongated slot 14, having its opposite edges notched, as clearly shown. A link 15 has its forward end pivoted to the pivotal connection of the beam, and its rear end carries a locking-lever 16, as clearly shown in Fig. 8. This locking-lever is pivoted to the link 15 and has a flat locking-pin 17, passing in the slot 14. When the lever is down in the position shown in Fig. 1, the flat edges of this pin engage the opposite notches of the slot and prevent the link from moving and holds the plate 11 in the desired adjustment, as will be readily understood, the lower and weighted end of the lever serving to hold it in this locked position. The plate 11 is thus moved backward or forward to raise and lower the shoe, and thus regulate the depth at which the cultivators shall run in the soil.

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

1. A cultivator comprising a forward head having a supporting-wheel, the said head having laterally-extending members, and rearwardly-extending beams having independent freely-swinging rear ends and pivoted at their forward ends to the ends of the laterally-extending members, the said beams carrying cultivators, substantially as described.

2. A cultivator comprising a head provided with a supporting-wheel, the said head having laterally-extending members, and rearwardly-extending rigid beams carrying cultivators, and rearwardly-extending beams having independent freely-swinging rear ends and pivoted at their forward ends to the outer ends of the laterally-extending members, the said beams carrying cultivators, the parts adapted to operate as described.

3. A cultivator comprising a forward head, laterally-extending members adjustably connected therewith at their inner ends, the outer ends of the said laterally-extending members carrying pivotal connections, and rearwardly-extending beams having independent freely-swinging rear ends and provided at their forward ends with coacting pivotal connections, the parts adapted to coöperate as described.

4. A cultivator comprising a head, laterally-extending members adjustably connected with the head, rearwardly-extending beams connected to the outer ends of the laterally-extending members, draft-bars connected to the outer ends of the laterally-extending members, and a support for the draft-bars connected with the said head, substantially as described.

5. A cultivator comprising a head, laterally-extending members at opposite sides thereof, and beam pivotal connections having a member connected with the laterally-extending members of the head, and inwardly and rearwardly extending members carrying rigid beams, said beams having cultivators, and rearwardly-extending beams pivoted at their forward ends to the said beam pivotal connections, the parts adapted to operate for the purpose described.

6. A cultivator comprising a head having connected to opposite ends thereof beam pivotal connections, the beam pivotal connections provided with rearwardly-extending members, beams rigidly connected with the rearwardly-extending members and extending rearwardly and converging and connected together at their rear ends, the beams provided intermediate their ends with cultivators and with a cultivator at its rear end, and rearwardly-extending beams pivoted at their forward ends to the said pivotal connections, substantially as described.

7. A cultivator comprising a head having at opposite sides thereof beam pivotal connections, each pivotal connection having upwardly-extending separated sockets, beams provided with depending cones entering the said socket, the beams projecting under the cones, and an adjustable member carried by the upper socket adapted to engage the forward ends of the beams, substantially as described.

8. A cultivator comprising a head, having at each side pivotal connections comprising two vertically-disposed separated sockets, beams provided at their forward ends with downwardly-disposed cones entering the upper ends of said socket, and a depending member carried by the upper socket engaging and adapted to hold the beams downward and against lateral or oscillating movement, substantially as described.

9. An adjustable handle for cultivators, comprising a beam, a plate at the upper side of the beam having at its front edge notches and its rear end flanged, a casting carried by the handle having an elongated slot, the pin at one side of the slot, and longitudinal series of projections in rear of the slot, and a clamping-bolt, substantially as described.

10. In a cultivator, the combination of the beam, a plate pivoted thereto and carrying a shoe, the upper end of the plate provided with a notched slot, a link pivoted at one end to the beam and carrying a locking member at its opposite end, said locking member adapted to lock in the notches of the plate, substantially as described.

11. In a cultivator the combination with the beams, of a vertically-swinging plate, and a laterally-moving shoe carried by the plate, substantially as and for the purpose described.

12. A cultivator comprising a rigid beam, freely laterally swinging beams at opposite sides thereof, said swinging beams being connected with the rigid beams against independent vertical movement, the said swinging beams carrying supporting-shoes whereby the shoes regulate the depth of the rigid as well as the swinging beams, substantially as described.

13. A cultivator comprising a freely-vibrat-

ing central portion having a centrally-arranged draft connection, in combination with freely-swinging beams pivoted at their front ends to said central portion, whereby when the teeth of the swinging beams meet an obstruction the central portion is vibrated and receives the lateral jerking and without disturbing the relative position of the beam cultivator-teeth to the rows or hills being cultivated, substantially as described.

14. A cultivator comprising a freely-vibrating central portion having a central support, and a centrally-arranged draft connection in combination with freely-swinging beams carrying cultivator-teeth at their rear ends and pivoted at their front ends to said central portion, whereby the central portion will vibrate when the beam cultivator-teeth meet an obstruction, and the relative position of the beam cultivator-teeth to the rows or hills being cultivated remain undisturbed, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES D. CARTER.

Witnesses:
FRED SUMMER,
GEO. J. GENEBACH.