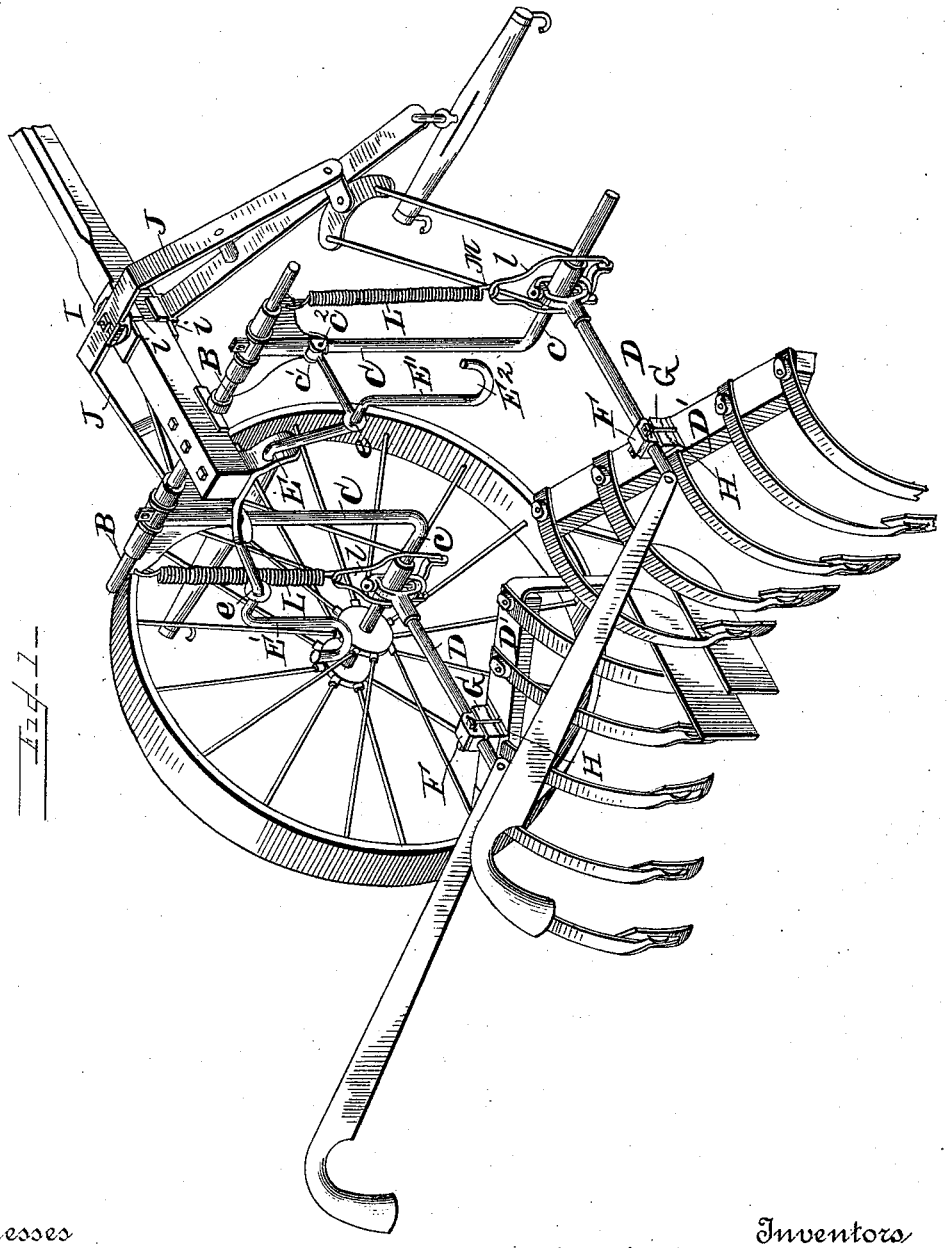
(No Model.) 4 Sheets—Sheet 1.

A. W. STEVENS & L. D. SWART.

WALKING CULTIVATOR.

No. 456,318. Patented July 21, 1891.



Witnesses

J. A. Tauberschmidt.

J. D. Kingsbury

Inventors

Abram W. Stevens and

Lester D. Swart

By their Attorneys

Whitaker & Prevost

(No Model.) 4 Sheets—Sheet 2.

A. W. STEVENS & L. D. SWART.

WALKING CULTIVATOR.

No. 456,318. Patented July 21, 1891.

Fig. 2.

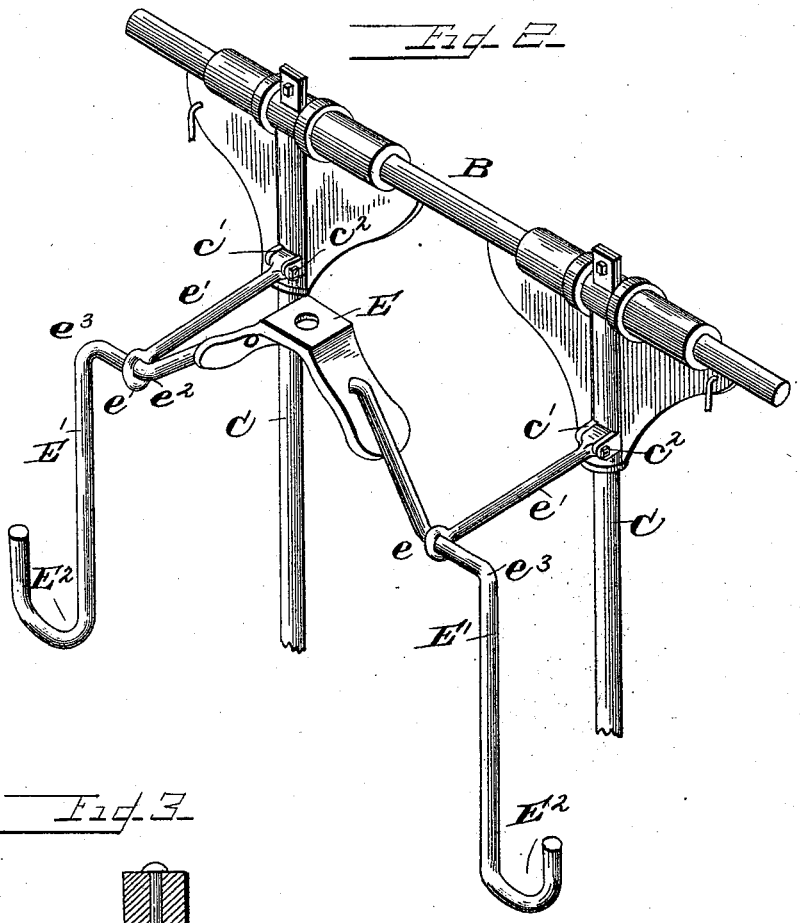
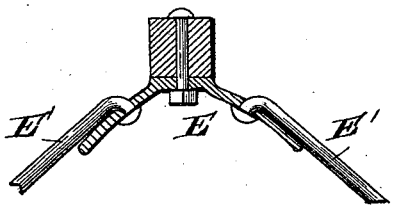


Fig. 3.



Witnesses

G. A. Taubenschmidt.

J. D. Knight Jr.

Inventors

Abram W. Stevens and

Lester D. Swart.

By their Attorneys

Whitaker & Prevost

(No Model.) 4 Sheets—Sheet 3

A. W. STEVENS & L. D. SWART.

WALKING CULTIVATOR.

No. 456,318. Patented July 21, 1891.

Fig. 4.

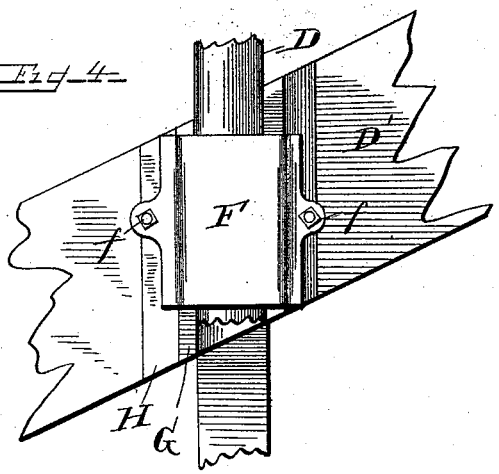


Fig. 5.

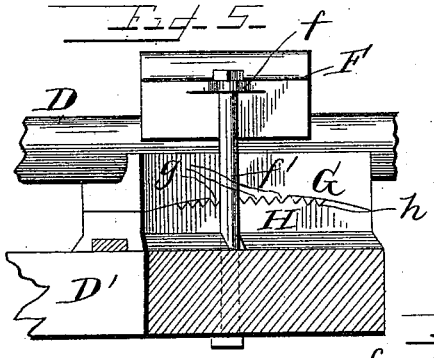


Fig. 7.

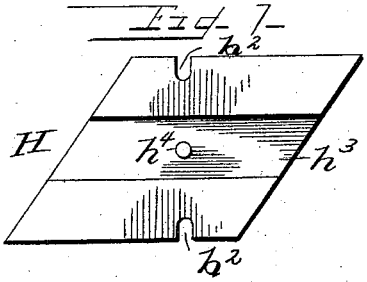


Fig. 6.

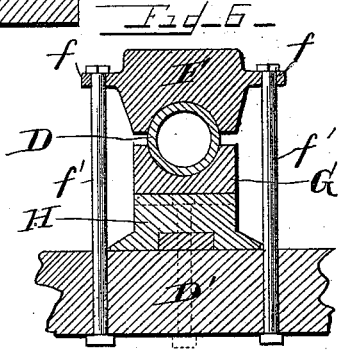


Fig. 8.

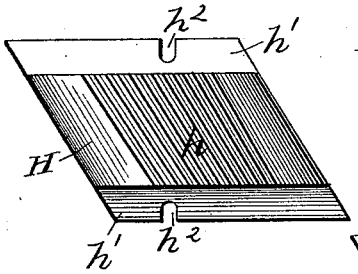


Fig. 9.

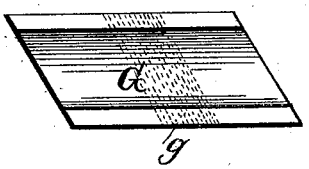
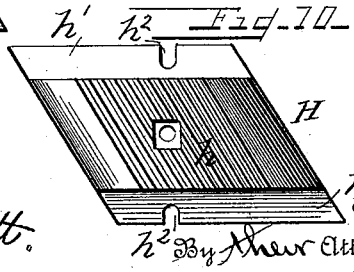


Fig. 10.



Witnesses

G. A. Taubenschmidt.

J. D. Knigsbury

Inventors

Abram W. Stevens

and Leder D. Swart

By their Attorneys

Whitaker & Prevost.

(No Model.) 4 Sheets—Sheet 4.

A. W. STEVENS & L. D. SWART.

WALKING CULTIVATOR.

No. 456,318. Patented July 21, 1891.

Fig. 11.

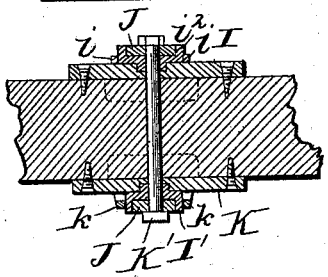


Fig. 12.

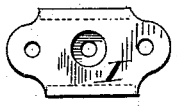


Fig. 13.

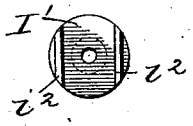


Fig. 14.

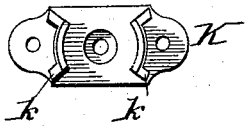
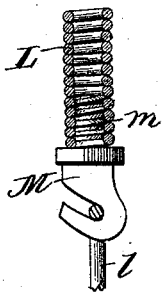


Fig. 15.



Witnesses.

G. W. Tauberschmidt.

J. H. Kingsbury

Inventors,
Abram W. Stevens,
and Lester D. Swart
By their Attorneys
Whitaker & Prevost.

UNITED STATES PATENT OFFICE.

ABRAM W. STEVENS AND LESTER D. SWART, OF AUBURN, NEW YORK, ASSIGNORS TO A. W. STEVENS & SON, OF SAME PLACE.

WALKING-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 456,318, dated July 21, 1891.

Application filed January 12, 1891. Serial No. 377,447. (No model.)

To all whom it may concern:

Be it known that we, ABRAM W. STEVENS and LESTER D. SWART, citizens of the United States, residing at Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Walking-Cultivators; and we 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.

Our invention relates to the class of wheel-cultivators known as "walking-cultivators;" and it consists in certain improved constructions and combinations of parts hereinafter described. These improved constructions are more particularly applicable to those cultivators in which separate gangs of plows or cultivator-teeth have a longitudinal movement independent of each other.

In the accompanying drawings we have illustrated the best mode in which we have contemplated embodying our invention, and said invention is disclosed in the following specification and claims.

Referring to the drawings, Figure 1 is a perspective view of a cultivator embodying our improvements with one wheel removed to show other constructions more clearly. Fig. 2 is a detached view of the plow or cultivator supports and the parts connected therewith. Fig. 3 is a transverse sectional view through the bearing-plate to which the supports are pivoted. Fig. 4 is a top plan view of the devices for coupling the plow or cultivator beam with the cultivator-head. Fig. 5 is a side elevation of the same. Fig. 6 is a transverse sectional view through the same devices and the cultivator-head. Fig. 7 is a bottom view of the base-plate of the coupling devices. Figs. 8 and 9 are top plan views showing details of construction. Fig. 10 is a modified construction of base-plate. Fig. 11 is a longitudinal sectional view of the evener pivoting device. Figs. 12, 13, and 14 are details of these devices, and Fig. 15 is a view of the construction employed in connecting the lower end of one of the springs with the stirrups supported thereby.

In cultivators of the kind shown there is usually provided a support for the plow or cultivator beams holding the gangs out of operative position when desired, as when moving from place to place. In most cultivators this support is secured to some stationary part of the implement. This is, however, unsatisfactory where the gangs of plows or cultivators have an independent longitudinal movement, as in case the gang is in its most rearward position the fulcrum on which the beam turns in raising is so near the support that the rear end of the beam has to be raised to a great height in order to engage the support. Various means have been adopted to overcome this difficulty. We avoid it by employing a pivoted support connected for movement with the pivoted standard with which the beam of the gangs is connected, as will be now more particularly described.

A is the pole or tongue, and B is a cross-bar to which are pivotally secured the vertical standards C C. Each of these standards is provided with an outwardly-extended horizontal arm *c*, to which the plow-beams D D are secured by a universal pivotal connection. A bearing-plate E is secured in rear of the cross-bar B to the pole or other stationary part of the implement. To this bearing-plate are pivoted the beam-supports E′ E′. These beam-supports are connected with the pivoted standards C C by links e' e', each having a pivotal connection with the standard and with the support. For convenience of construction the support is bent or otherwise given the shape shown, which provides the horizontal portion between the points e^2 e^3, and the link is pivoted thereto by giving it a turn around it. The opposite end of the link is pivoted between the ears c' c^2 on the standard C. It will be seen that by this construction the supports move backward as the standard moves by the nearly parallel motion given to the support, so that the hook E^2 at the lower end maintains substantially the same position with respect to the fulcrum of the plow-beam, and that therefore the latter can be raised at all times and placed upon the support with equal facility.

In the practical use of the cultivator it is sometimes found desirable to adjust the plow or cultivator head so that the plane of the same transversely of the implement may be

changed, and it is also sometimes desirable, especially where spring cultivator-teeth are employed, to adjust the head so as to vary the angle at which the teeth enter the ground. We accomplish this result by connecting the head to the beam through the intervention of the following instrumentalities, (see Figs. 4 to 10, inclusive:) In these figures F designates the upper plate of the clamp engaging the beam, and G is the lower clamping-plate. These parts are hollowed out to fit the exterior of the plow-beam. The lower clamping-plate engages a base-plate H, which rests upon the plow or cultivator head D′. The base-plate H and lower clamping-plate G are provided with reversely-curving surfaces fitting each other, the line of curvature being on the line of draft. We prefer to provide the base-plate with a convex surface and provide it with transverse grooves $h\,h$, which are engaged by transverse ribs $g\,g$ of corresponding shape on the under side of the plate G. The top clamping-plate F is provided with perforated ears $f\,f$, and the parts are secured to the beam D and to the head D′ by bolts $f'\,f'$, passing through the ears $f\,f$ and the said head. The number of the ribs $g\,g$ is less than the number of grooves $h\,h$, and by adjusting the ribs forward or rearward in the grooves the angle of the teeth is regulated. The base-plate H is provided with the outwardly-extending flanges $h'\,h'$, and these flanges are provided with notches or recesses h^2, through which the bolts $f'\,f'$ pass and hold the base-plate from movement upon the cultivator-head.

It is sometimes desirable to provide the head with an additional tooth and to secure this on line with the beam. This we accomplish by providing the base-plate with a longitudinal recess or groove h^3 of such depth as to receive the tooth and clamp it firmly upon the head. In order that the tooth may be held securely against withdrawal when in use, we provide the base-plate with the projection h^4, which enters a recess or opening in the tooth. Instead of employing this construction, we may provide the base-plate with an opening through the same and a recess to receive the head of a bolt, as shown in dotted lines in Fig. 6 and in full lines in Fig. 10, and bolt the plate and tooth firmly to the cultivator-head, so that the bolts $f\,f$ can be loosened to secure the desired adjustment of the head without loosening the tooth.

In this class of cultivators it is usual to employ a draft-evener of the form shown in Fig. 1, inclining downward from near the pole to the ends to which the draft is applied. When eveners of this construction are employed, the draft tends to twist the evener upon the pole and cause the under portion of the evener to engage the rear side and the upper portion to engage the forward side of the pivotal bolt. This produces great friction on the bolt, and as the evener is in almost constant motion results in great wear upon the parts. In order to avoid this we employ for the pivoting of the evener the constructions best seen in Figs. 1, 11, 12, 13, and 14. Upon the pole we place the plate I, having flanges i to engage the sides of the pole. This plate has a circular socket or countersink i' in its upper face. In this recess or socket is fitted a circular projection or boss i^2 on a bearing-plate I′, which is provided with ribs $i^3\,i^4$ to engage the opposite edges of the upper bar of the evener. A socket-plate K, of the same construction as the plate I, except that it is provided with the curved and angular ribs $k\,k$, is placed beneath the pole with a secondary bearing-plate I′, having ribs to engage the lower bar of the evener.

The plates I and K we term the "socket-plates." The two parts of the evener and the plates are secured together by the bolt K′. It will be seen that when the parts are assembled and secured, as shown in Figs. 1 and 11, the strain resulting from the draft is borne by the bearing-plates and the bolt K relieved from the twisting or cramping action. The two bearing-plates being separated and extending but a short distance from the surface of the plates I and K, no cramping is produced and the evener moves easily on its pivot.

In order to provide a convenient means for connecting the coiled springs L with the stirrups l, we employ the construction shown in Fig. 15, which consists in the hook M, provided at its upper end with a screw-threaded portion m, fitting the interior of the coiled spring. By this means we provide for the instantaneous adjustment of the spring within certain limits. By disengaging the stirrups l and turning the hook in the direction to unscrew its shank m from the coil the force of the spring is lessened, and by turning it in the opposite direction its power is increased. When the desired adjustment is made, the stirrup is replaced in the hook.

What we claim, and desire to secure by Letters Patent, is—

1. In a cultivator, the combination, with the pole, of an evener extending downward from its pivotal point and rigid between its pivotal and draft-attaching points, said evener being divided at its center and having two bearings, one above the other, a bolt or pin securing the evener to the pole, and a socket and bearing-plate to receive the draft and relieve the bolt from increased wear resulting from applying the draft to the evener below the point of the pivoting, substantially as described.

2. In a cultivator having independently-moving plow or cultivator beams and pivoted axle-standards, of an independently-pivoted support for one of said beams on each side of the machine, connected for movement with the axle-standard at that side of the machine, substantially as described.

3. In a walking-cultivator, the combination, with the pole, of the axle-standards, each having an independent pivotal connection with

the pole, and plow and cultivator beams, and plow-beam supports pivotally supported from said pole, and a link connecting each support with an axle-standard, substantially as described.

4. In a cultivator, the combination, with the cultivator head and beam, of devices for connecting the two, including means for adjusting said head to different angles toward or from the side of the cultivator, and means for adjusting the same to different angles toward or from the stationary parts of the machine, substantially as described.

5. In a cultivator, the combination, with the cultivator head and beam, of devices for connecting the two, including surfaces curving in the line of draft, and retaining means, whereby the head and the pitch teeth can be adjusted, substantially as described.

6. In a cultivator, the combination, with the cultivator beam and head, of devices for connecting the two, including means for adjusting said head to different angles toward or from the side of the machine, means for adjusting the same to different angles toward or from the stationary parts of the machine, and means for securing a tooth to the cultivator-head between it and the beam, substantially as described.

7. In a cultivator, the combination, with the cultivator beam and head, of connecting devices for the two, including the clamping-plates, and a base-plate provided with a recess to receive a tooth between the base-plate and head, substantially as described.

8. In a cultivator, the combination, with a plow or a cultivator beam, of the coiled supporting-spring, the hook or eye block having a thread fitting the interior of the spring, and the stirrup, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

ABRAM W. STEVENS.
LESTER D. SWART.

Witnesses:
W. M. BRINKERHOFF,
W. H. WHITAKER.