

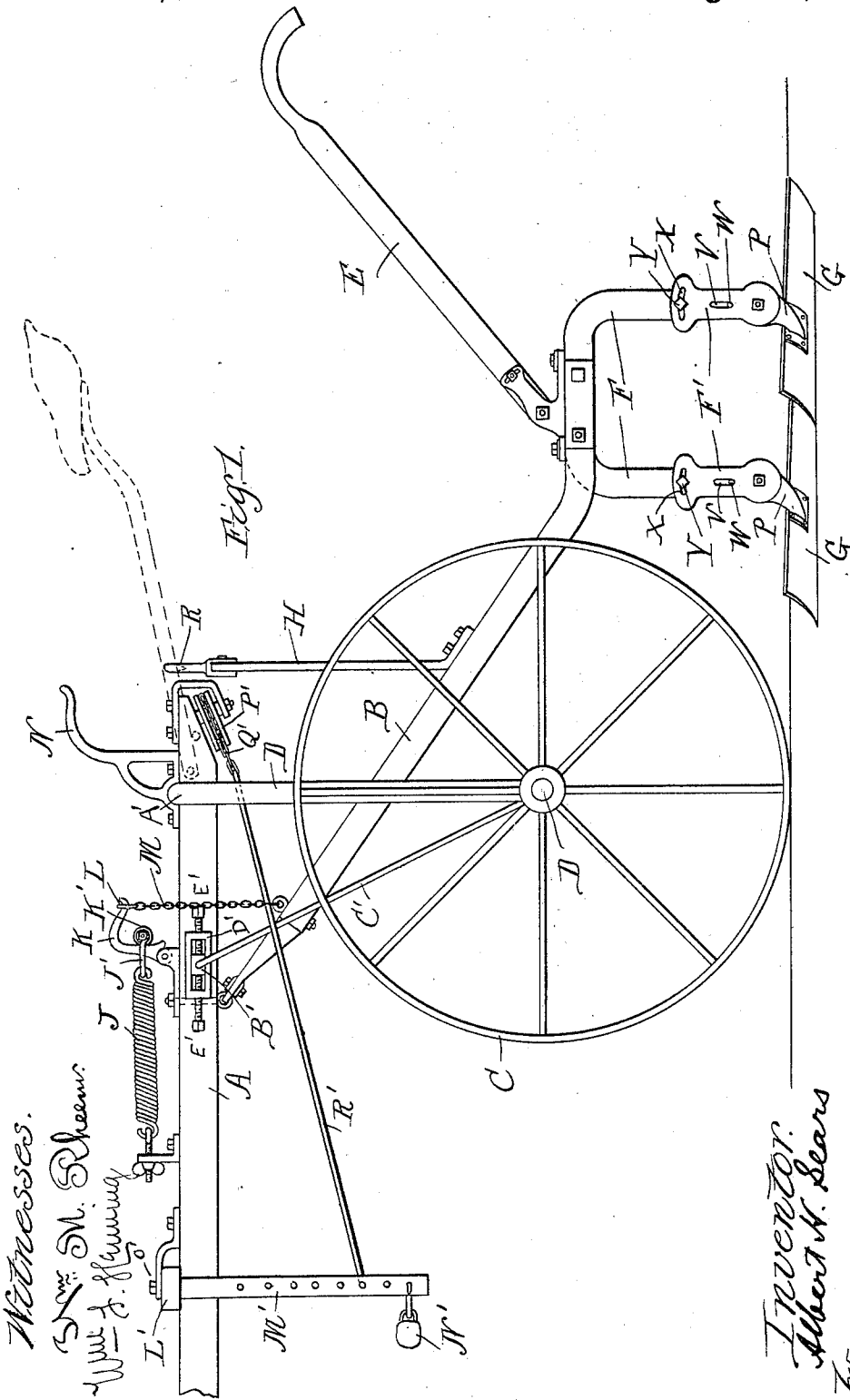
(No Model.)

2 Sheets—Sheet 1.

A. H. SEARS.
CULTIVATOR.

No. 566,418.

Patented Aug. 25, 1896.



(No Model.)

A. H. SEARS.
CULTIVATOR.

2 Sheets—Sheet 2.

No. 566,418.

Patented Aug. 25, 1896.

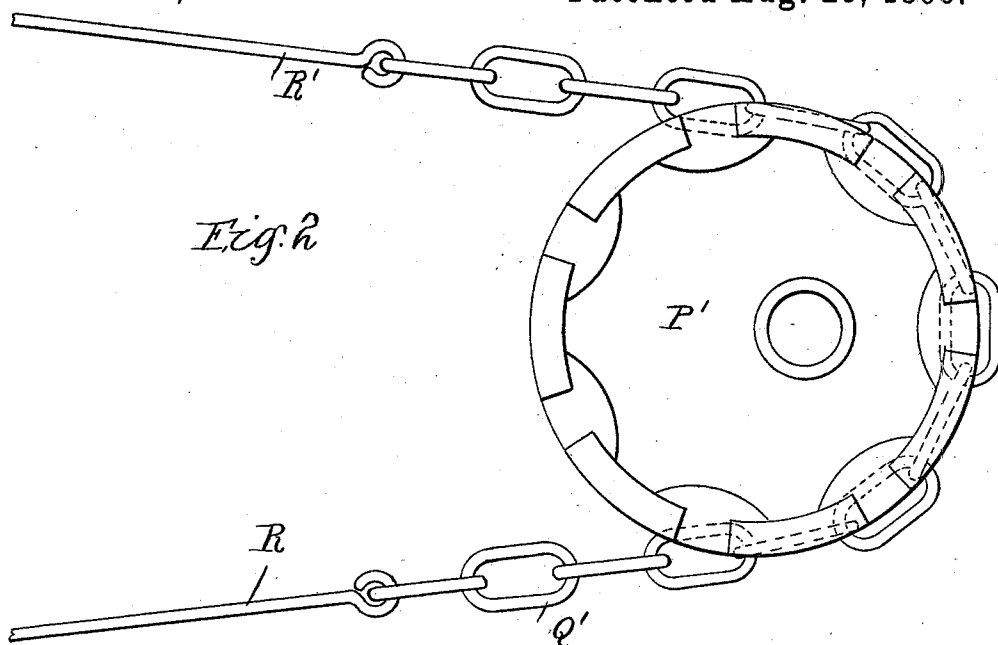


Fig. 2

Fig. 6.

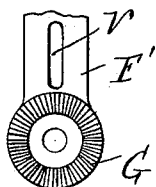


Fig. 5.

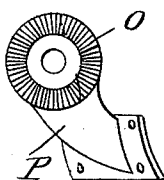


Fig. 4.

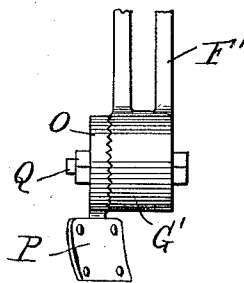
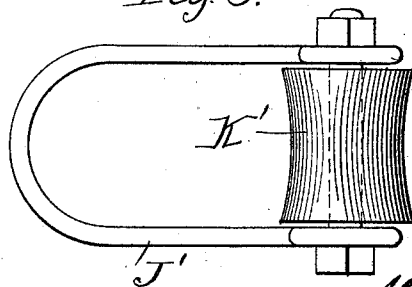


Fig. 3.



Witnesses.
Wm. M. Rheum.
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Inventor
Albert H. Sears
by Brown & Darby
attys

UNITED STATES PATENT OFFICE.

ALBERT H. SEARS, OF PLANO, ILLINOIS.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 566,418, dated August 25, 1896.

Application filed September 7, 1895. Serial No. 561,740. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. SEARS, a citizen of the United States, residing at Plano, in the county of Kendall and State of Illinois, have invented a new and useful Improvement in Cultivators, of which the following is a specification.

This invention relates to improvements in cultivators, and its object is to simplify, improve, and render more efficient machines of this class.

The invention consists, substantially, in the construction, combination, location, and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and, finally, more specifically pointed out in the appended claims.

Figure 1 is a view in side elevation of a machine embodying my invention. Fig. 2 is a detail view in plan of the eccentric compensating-gear. Fig. 3 is a detail view of the link for supporting the drag-bars. Figs. 4, 5, and 6 are detail views illustrating means for adjusting the angularity of the set of shovels.

The same part is indicated by the same reference-sign wherever it occurs throughout the several views.

As shown in the accompanying drawings, my invention is applied to a straddle-row cultivator. It is obvious, however, that the several improvements hereinafter to be described and claimed are equally well adapted to other forms of cultivators and similar machines. I do not confine myself, therefore, to the exact form shown, nor to the exact kind of implement or machine to which the invention is adapted.

In the drawings, A designates the tongue of the cultivator; B, the drag-bars; C, the wheels, which are mounted upon the axle D.

E designates the handle of the cultivator, F the upper members of the standards for supporting the shovels or blades, and F' the lower members of such standards.

A designates the arch for regulating the width of the drag-bars.

J designates the spring for elastically supporting the weight of the drag-bars and cultivator-blades; K, the hooked rock-lever; L, the evening bar or rod supported by the rock-

lever and itself supporting the chains M, which connect the same with the drag-bar chains.

N designates the hook on the main frame for supporting the cultivating implement when it is lifted, so that the yoke R engages such hook. So far the general features are substantially the same as that shown and described in my pending application for patent on cultivators, Serial No. 536,921, filed October 21, 1894. In said application is set forth a construction wherein the drag-bars B are universally pivoted to the tongue or frame-work of the machine, and are supported by means of a spring or conjoint action of two or more springs J, through the chains M, evener-bar L, and hooked rock-lever K, it being explained that ordinarily when the cutting implements are in action there should be very little pull given by the spring, and for that reason the rock-lever K is depressed, so as to make the spring or springs J pull on or near the dead-center. I have found, however, that when the attendant or operator desires to lift the cultivating implement it is done with considerable difficulty due to the relaxing of the spring or springs J as the implement is raised. In order to provide a construction whereby the raising of the drag-bars is facilitated, I provide the link J', by which the spring or springs J are connected to the rock-lever K, with a friction-roller K', preferably, though not necessarily, provided with a slight peripheral groove and arranged to receive the contact of said link with rock-lever K. By this construction the roller K' rides easily and smoothly up the surface of the hooked rock-lever K when the attendant desires to raise the drag-bars or shovel-carriers, and the raising is rendered much more easy by reason of the constantly-increasing leverage of the spring. The principle of action of this feature of the invention by which the advantages sought are secured is as follows: So long as the shovels or cultivating implements are in use, that is, when the drag-bars are in their lowest or depressed position, the spring or springs J exert but little if any power tending to elevate the same by reason of the fact that the face of hooked lever K is slightly bent or inclined from the spring, and hence the pull of the spring is on or near the

dead-center of said lever. When, however, it is desired to raise the drag-bars and the shovels or cultivating implements, the moment the drag-bars are slightly raised by the attendant the hooked rock-lever assumes a slightly-reversed inclination, the pull of the spring causes the roller K' to at once and immediately ride up the straight surface thereof, and hence the leverage through which the pull of the springs is exerted is instantly increased and the attendant can easily and without much effort complete the elevation of the drag-bars, being aided therein by the entire force or pull of the springs acting through a maximum leverage. It will be understood that this feature of construction is equally well adapted to any machine of this class and wherever the conditions require a construction of this kind. I do not desire to confine myself, therefore, to the exact form or type of machine shown, nor to the exact location of this feature.

In my prior application the desirability of a wide range of adjustment of the shovel or cultivating implement, both as to pitch and as to longitudinal incline, is set forth and a construction is described and claimed whereby this result is accomplished and wherein the pitch adjustment is secured by interposing a wedge between the blade or shovel G and the lower member F' of the blade or shovel supporting standard. By reversing or altering the position of the wedge the pitch of the shovel or other implement is correspondingly altered. This, however, necessitates the removal of the blade, and, moreover, a nice adjustment is difficult to attain. I have therefore devised a construction for securing the necessary adjustment in a rapid and efficient manner by facing off the lower end of the standard F' and corrugating or serrating said face, as shown at G', (see Fig. 6,) and I provide a supporting-block P with a similarly and correspondingly grooved or serrated face O, adapted to be secured to the face G' of standard F' in any suitable manner, as by means of a bolt Q. The blade or other implement is bolted or otherwise secured to, or, if desired, it may form part of, block P. By loosening bolt Q the face O can be readily adjusted to any degree of "pitch" adjustment of the blade and then bolted to face G', the serrations or grooves serving to maintain said faces in rigid engagement with each other. This adjustment, when combined with the vertical and angular adjustments of the lower supporting-standard F by reason of the slots X V and bolts W Y, enables me to secure an exceedingly valuable and practical range of adjustment of the cutting blade or implement.

In making machines of this class it is desirable to so arrange the parts to the front and rear of the axle D that they will nicely counterbalance each other, the axle forming the fulcrum. When this counterbalancing is once attained to a fine adjustment, any

change or addition of parts on either side will disarrange the adjustment and cause the weight on one side or the other to more than counterbalance the weight on the other side. This is particularly the case where the machine is adapted to use different kinds of cultivating implements or shovels, as the implements vary in size and weight for the different purposes for which they are intended. The objection noted is particularly present in the case of riding-machines, where the attendants or operators vary in weight, thereby causing the machine to drag heavy, and also in the case of machines combining a walking and riding construction, as indicated in Fig. 1. In order to avoid the objection noted and to provide a construction wherein the fulcrum may be adjustably varied according as the counterbalancing-weight varies, I journal axle D in suitable bearing A', formed on the tongue A or other suitable part of the framework. Upon the tongue A or other suitable part of the framework I mount a slide B' and connect the same by means of any suitable connection, as, for instance, rods C', to the axle D, preferably at a point adjacent to the wheels C. By adjusting slide B back and forth the axle D may be rocked to vary the relative position of the fulcrum, as varying conditions may require. The slide B' may be adjusted and held in adjusted position in any suitable or convenient way. I have shown, as merely illustrative of the idea, a simple construction for accomplishing the desired result, wherein slide B' is mounted to slide back and forth in a box D', through the opposite ends of which are tapped the set-screws E' E'. By turning the set-screws E' the slide may be adjusted as desired and held in adjusted position. It will be evident that the rods C' may be the usual axle brace-rods employed in machines of this class.

I will now describe the construction for securing an equalization of the draft strains.

In machines of this class, and especially machines called "straddle-row" machines, the axle D is formed in substantially U shape to arch over the row, and the tongue is necessarily secured to the arch of the axle, thereby being elevated above the point where the draft can be applied with the best and most satisfactory results. In such cases it is usual to provide the evener-bar L' with depending arms or brackets M', to which the trees N' are adjustably attached. Such a construction necessitates a suitable bracing of the arms or brackets M' in order to prevent the evener-bar L' from rocking edgewise, thereby bending or otherwise seriously injuring, if not breaking, the bolt O', by which the bar L' is pivotally secured to the tongue or framework. In providing such a bracing it is necessary to provide for the rocking of the evener-bar L', in order to equalize the draft strains. I have devised a construction for accomplishing these objects wherein the hangers or brackets M' are braced at all times, notwithstanding

ing the varying positions of bar L', due to the rocking of said bar L' in a horizontal plane. Many constructions for accomplishing this result may be employed, and, while I have shown a specific construction and arrangement, I do not desire to be limited or restricted thereto. In the particular construction shown I mount or journal a wheel P' in a convenient position upon the tongue or other suitable part of the framework and connect said wheel to the depending hangers or brackets M'. Wheel P' is eccentrically journaled, as shown, and, preferably, though not necessarily, comprises a sprocket-wheel adapted to receive a chain or other flexible connection Q', the ends of which are respectively connected to the hangers or brackets M', depending from the opposite ends of the even-er-bar L'. I have shown rods R' connecting said chain with said brackets. From this construction it will be seen that these brackets or hangers M' will be efficiently braced at all times whatever may be the swiveling motion of bar L' upon its pivot-bolt, the eccentricity of the wheel P' serving to efficiently take up the slack in the connections Q' R', caused by rocking the even-er-bar L', and to this end the greatest eccentricity of gear P' is presented toward the brackets or hangers M', and medially with respect thereto, when the bar L' is in its normal position.

Many variations and changes in the specific details of construction of parts would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited or restricted to the exact details of construction shown and described; but,

Having now explained the object and nature of my invention and an operative embodiment thereof, what I claim as my own invention, and desire to secure by Letters Patent of the United States, is—

1. In a cultivator, a main frame, a supplemental frame, means for supporting the latter from the former, comprising a rock-lever pivotally mounted on said main frame, a spring or springs also mounted on said main frame and movably connected at one end to said lever, and connections between said lever and supplemental frame; as and for the purpose set forth.

2. In a cultivator, a main frame, a rock-lever pivotally mounted on said main frame, connections between said lever and supplemental frame, a spring or springs mounted on said main frame, and having movable connection with said lever; as and for the purpose set forth.

3. In a cultivator, a main frame, a supplemental frame, a rock-lever pivotally mounted on said main frame and having a substantially straight edge, connections between said lever and supplemental frame, and a spring mounted on said main frame, and arranged to movably engage the straight edge of said lever; as and for the purpose set forth.

4. In a cultivator, a main frame, a supplemental frame, a movable support mounted on said main frame, connections between said support and supplemental frame, a spring, a link connected thereto and adapted to movably engage said support; as and for the purpose set forth.

5. In a cultivator, a main frame, a supplemental frame, a movable support mounted on said main frame, connections between said support and supplemental frame, a spring, a link connected thereto having a roller mounted thereon, said roller adapted to engage said support; as and for the purpose set forth.

6. In a cultivator, a main frame, a pivoted rock-lever mounted thereon, a spring mounted on said main frame and carrying a friction-roller, said roller adapted to engage said pivoted lever, a supplemental frame carrying the cultivating implements, and connections between said supplemental frame and pivoted lever; as and for the purpose set forth.

7. In a cultivator, a main frame, supporting-wheels therefor, a pivoted axle having its ends arranged in line with each other and adapted to receive said wheels, brace-rods connected at one end to said axle and at the opposite end to said main frame, and means for adjusting the main-frame connection of said brace-rods lengthwise of the machine; as and for the purpose set forth.

8. In a straddle-row implement, an even-er-bar, means for attaching the draft-trees to the ends thereof, a brace for said bar comprising an eccentrically-mounted gear, and connections between said gear and the ends of said bar; as and for the purpose set forth.

9. In a straddle-row implement, an even-er-bar, means for adjustably attaching the draft-trees thereto, an eccentrically-mounted gear, a flexible connection arranged to pass therearound and connected to the ends of said bar; as and for the purpose set forth.

10. In a straddle-row implement, an even-er-bar, hangers or brackets depending from the ends thereof, adapted to receive the draft-trees, and means for bracing said brackets or hangers, comprising an eccentrically-mounted gear, a flexible connection arranged to pass therearound and connected at the ends thereof with said brackets or hangers; as and for the purpose set forth.

11. In a straddle-row implement, an even-er-bar, hangers or brackets depending from the ends thereof, adapted to receive the draft-trees, an eccentrically-mounted sprocket-gear, a sprocket-chain arranged to pass therearound, and connections between the ends thereof and said brackets or hangers; as and for the purpose set forth.

12. In a straddle-row cultivator, a main frame, an arched axle journaled to rock or swing therein said axle provided with integral vertically-arranged sides and having its ends projecting in line with each other and at right angles to the vertical sides of said

arched axle, wheels mounted on said ends and adapted to support said frame, a rod connected at one end to each of said projecting axle ends, and adjustably connected at the opposite ends thereof to said main frame, whereby said wheels may be adjusted in unison, forwardly and backwardly with reference to said frame; as and for the purpose set forth.

10 13. In a straddle-row implement, an even-
bar, means for attaching the draft-trees there-
to at variable heights, an eccentric and
means connecting said eccentric to the re-
spective ends of said even-bar; as and for
15 the purpose set forth.

14. In a straddle-row implement, an even-
bar, means for attaching the draft-trees to
the respective ends of said even-bar at vari-
able heights, braces for said draft-trees, com-
prising an eccentric and flexible connection
20 between said draft-trees and eccentric; as
and for the purpose set forth.

15. In a straddle-row implement, an even-
bar, means for attaching the draft-trees there-

to at the respective ends thereof, an eccen- 25
tric wheel having its greatest eccentricity
presented toward said even-bar when the
parts are in their normal positions, and a
flexible connection, connected at the ends
thereof with the respective ends of said 30
even-bar and arranged to pass around said
eccentric; as and for the purpose set forth.

16. In a straddle-row implement, an even-
bar, means for attaching the draft-trees there-
to at variable heights, an eccentrically- 35
mounted sprocket-wheel, and means con-
nected to said draft-trees, and including a
sprocket-chain, said sprocket-chain arranged
to pass around and engage said sprocket-
wheel; as and for the purpose set forth. 40

In witness whereof I have hereunto set my
hand, this 4th day of September, 1895, in the
presence of the subscribing witnesses.

ALBERT H. SEARS.

Witnesses:

S. E. DARBY,

M. I. CAVANAGH.