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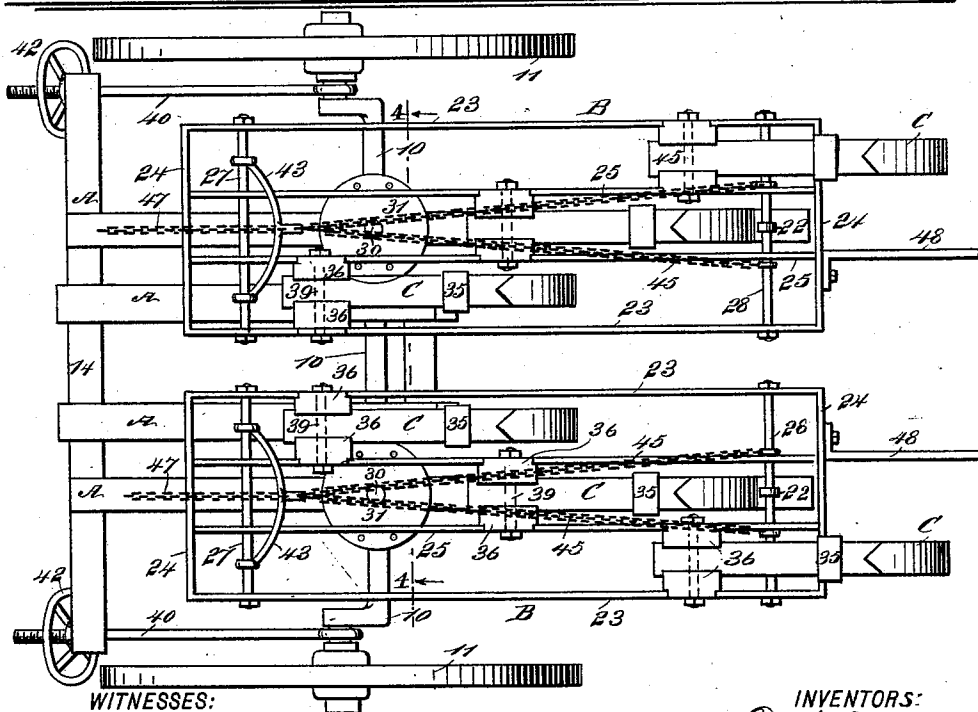
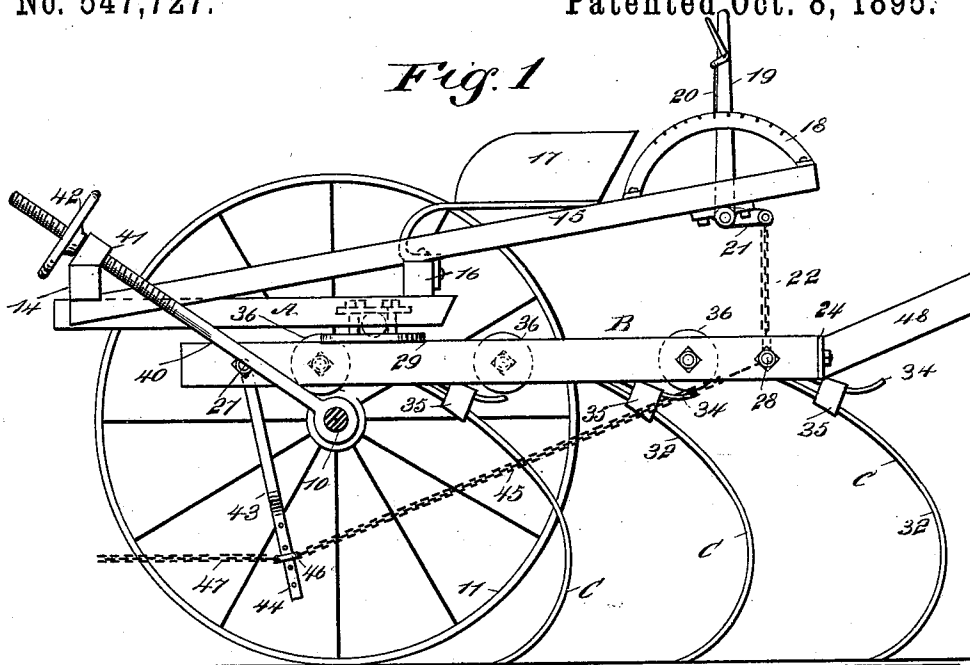
D. A. LENOX & J. A. UNDERWOOD.

CULTIVATOR.

No. 547,727.

Patented Oct. 8, 1895.

Fig. 1



WITNESSES:

John Bergstrom  
Fred Aker

Fig. 2

INVENTORS:  
D. A. Lenox  
J. A. Underwood  
BY Munn & Co  
ATTORNEYS.

(No Model.)

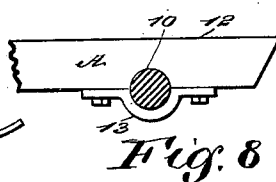
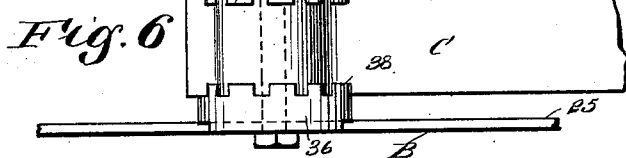
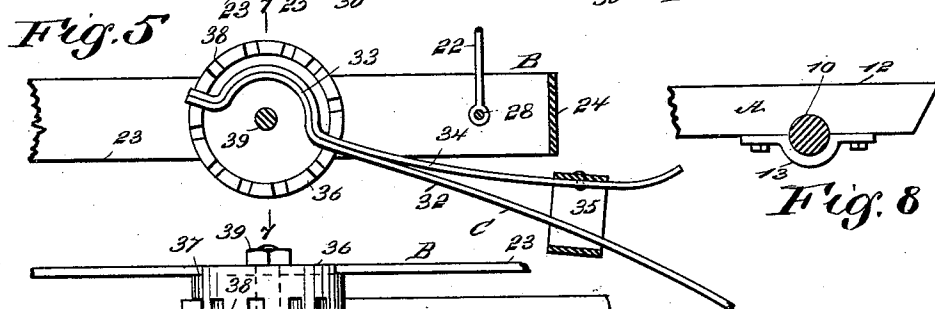
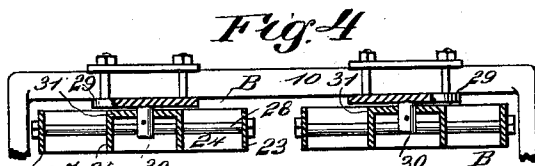
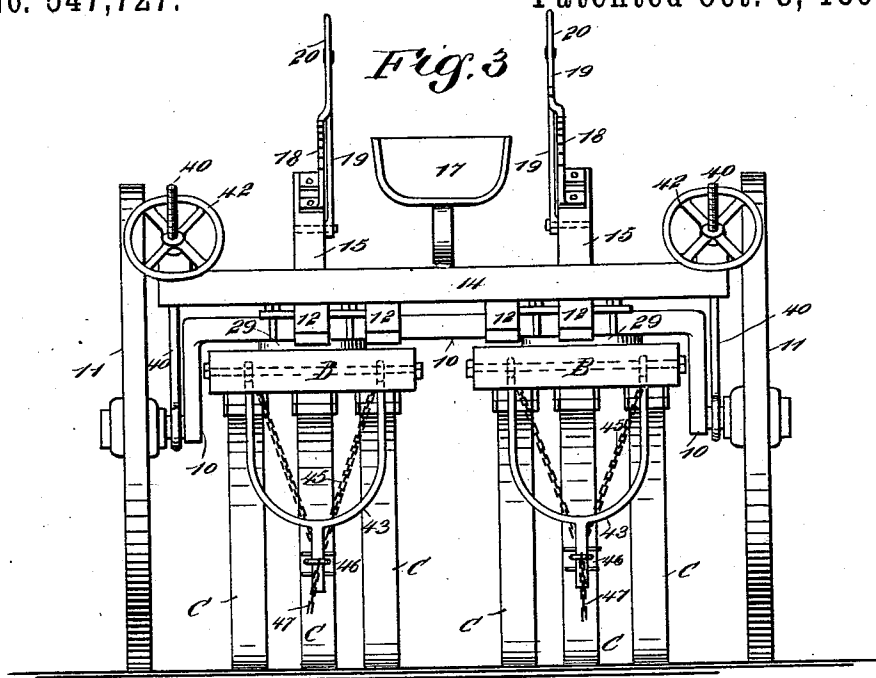
2 Sheets—Sheet 2.

D. A. LENOX & J. A. UNDERWOOD.

CULTIVATOR.

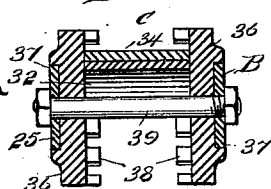
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WITNESSES:

*John Bergstrom*  
*Frederick*



INVENTORS:

*D. A. Lenox*  
*J. A. Underwood*

BY

*Munn & Co*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

DAVID ALLAN LENOX AND JAMES ANDREW UNDERWOOD, OF SALEM,  
MISSOURI.

## CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 547,727, dated October 8, 1895.

Application filed November 8, 1894. Serial No. 528,264. (No model.)

*To all whom it may concern:*

Be it known that we, DAVID ALLAN LENOX and JAMES ANDREW UNDERWOOD, of Salem, in the county of Dent and State of Missouri, have invented a new and Improved Cultivator, of which the following is a full, clear, and exact description.

Our invention relates to a cultivator; and it has for its object to provide a cultivator that will be flexible, one having spring-teeth, and a cultivator in which the teeth will be adjustably attached to frames, and whereby the said frames may be moved either to the right or to the left, thus enabling obstructions to be passed while the ground is being operated upon.

Another object of the invention is to so construct the teeth that they will be exceedingly durable and less liable to breakage than the teeth of ordinary construction, and whereby, also, the depth at which the teeth shall enter the ground will be regulated entirely by the draft, thus dispensing with lock-levers or like devices.

Another object of the invention is to provide means whereby the entire bed or body of the cultivator carrying the teeth may be adjusted to compensate for any wear that the teeth may sustain.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the machine, the axle being in section. Fig. 2 is a bottom plan view of the machine. Fig. 3 is a front elevation thereof. Fig. 4 is a section taken substantially on the line 4 4 of Fig. 2, illustrating the manner in which the tooth-carrying frame is attached to the axle. Fig. 5 is a detail sectional view illustrating the manner in which the teeth are adjustably secured in the frame. Fig. 6 is a plan view of the upper portion of one of the teeth and the means employed for securing the same in the frame. Fig. 7 is a section taken substantially on the

line 7 7 of Fig. 5, and Fig. 8 is a detail view illustrating the manner in which the platform of the machine is secured to the axle.

In carrying out the invention the axle 10 is an arched axle and is provided at each of its extremities with a ground-wheel 11. A platform A is erected upon the bow-section of the axle, and the said platform, as shown in the drawings, consists of a series of parallel beams 12, the said beams being attached to the axle by means of clips 13, as shown in Fig. 8. At the forward end of this platform a saddle-bar 14 is secured, extending from side to side of the platform and preferably beyond the sides, and at each side of the platform a beam 15 is located, which extends from the saddle-bar upwardly and rearwardly, the said beams being supported intermediate of their length by a cross-bar 16. The driver's seat 17 may be and preferably is attached to the platform, while upon the rear extremity of each side beam 15 a rack 18 is located and upon each of said beams a hand-lever 19 is fulcrumed, being provided with the usual thumb-latch for engagement with the rack, and each hand-lever is provided at its lower end with a crank-arm 21, to which a link or chain 22 is attached, the links being attached each to a rear central portion of a tooth-carrying frame B. Two of these frames are preferably employed, and they are usually made of bar iron or steel and are substantially rectangular in general contour, being of considerably greater length than width. Each frame may be said to comprise side bars 23, end bars 24, and any desired number of intermediate longitudinal bars 25, placed at predetermined distances apart. A rod 27 is passed through the longitudinal bars of each tooth-carrying frame at or near the front and a corresponding rod 28 is placed at or near the back of each of said frames, the links 22 being attached to the rear rods 28. Each frame, as shown especially in Fig. 4, has a swivel attachment to the bow-section of the axle 10, and to that end two plates 29 are clipped or otherwise secured upon the axle, one upon each side of its center, each plate carrying a downwardly-extending pivot 30, which is made to enter a suitable bed-plate 31, formed upon the upper face of the frame. Each frame extends rearwardly beyond the

axle a much greater distance than forwardly and each frame carries a number of spring-teeth C, the teeth being in staggered arrangement or one extending rearwardly beyond the other a predetermined distance. Each tooth is constructed of a spring-sheet material and comprises a body-section 32, which at its upper end is provided with a decidedly upward curve or arch 33, and is curved downwardly and rearwardly and then carried forwardly at its lower extremity, which is sharpened or pointed in any approved manner.

In completing the construction of a tooth a supporting-spring strip 34 is employed, which is made to fit closely and conform to the arched upper portion of the body of the tooth, and the said spring-supporting strip is then made to leave the body of the tooth and extend rearwardly in a diverging line a predetermined distance, as shown in Fig. 5. The supporting strip or section 34 of the tooth has a sleeve 35 secured to it, through which the body of the tooth passes, as is shown in the same figure, and this sleeve serves to check the rebounding of the tooth when passing over an obstruction. The teeth may be adjustably held in the frame in the manner shown in detail in Figs. 5, 6, and 7, in which it will be observed that upon opposing longitudinal bars of a frame B two clutches 36 are secured, one facing the other. These clutches are preferably of disk shape and have recesses 37 in their outer faces to receive the longitudinal bars, as shown particularly in Fig. 7. Each clutch upon its inner face is provided with a series of teeth 38, and the upper arched section of a tooth is placed between two such opposing clutches, and the surface of both the body of the tooth and the upper portion of the spring-supporting strip or section 34 of the tooth at each side of the arch therein is made to enter predetermined spaces between the said teeth 38, as is clearly shown in Fig. 5. Under this construction it will be observed that the teeth may be adjusted to enter the ground normally to a greater or a less depth, and the clutches are drawn together or in clamping engagement with a tooth between them by means of a bolt 39, or its equivalent, passed through the central portions of the clutches and the bars of the frame to which they may be attached. The hand-levers 19 are adapted for raising or for lowering the frames, and consequently the teeth. In the event the teeth should become worn at their points they may be rendered yet further serviceable by adjusting the axle in a manner to bodily lower the frames B, carrying the teeth, and this is accomplished by locating upon each arm of the axle an adjusting rod or bar 40, the forward end of which is threaded, and the threaded portion of these bars or rods are carried through suitable bearings 41, located upon the saddle-bar, and an adjusting-nut 42, preferably in the nature of a hand-wheel, is secured upon each rod 40 at its outer or forward extremity. The

depth at which the teeth shall enter the ground in the act of cultivating is regulated entirely by the draft, and such a regulation of the teeth is effected by pivoting upon the forward cross-bar 27 of each frame a downwardly-extending draft-iron 43, which at its lower end is provided with a series of apertures 44.

Two chains 45 are attached to the rear cross-bar 28 of each frame, one at each side of the center, as shown in Fig. 2, and both of these chains are attached at their forward ends to a ring 46 or its equivalent, secured upon one of the draft-irons 43, between predetermined apertures therein, as shown in Fig. 1, and each of said rings is attached to a draft-chain 47, which is connected with a singletree or doubletree, whichever may be employed. According to the adjustment of the rings 46 on the draft-iron the teeth are made to enter the ground to a greater or less depth as draft is applied to the machine in a forwardly direction. It will thus be observed that lock-levers or their equivalents for holding the teeth in the ground are dispensed with.

Handles 48 for guiding the machine may be attached one to each of the frames B at the rear, if desired, and when the machine is to be used as a harrow the two frames may be held stationary by connecting them by bolts or equivalent devices.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a cultivator, the combination, with an arched axle, adjusting bars connected with the axle at the spindle portions thereof, bearings attached to fixed supports through which the adjusting bars pass, and adjusting nuts carried by the said bars, of a frame carried by the arched portion of the axle, and teeth carried by the said frame, whereby as the teeth wear the axle may be adjusted to bodily lower the toothed carrying frame, substantially as shown and described.

2. In a cultivator, the combination with a frame, of a spring tooth having one end secured to the frame, a spring supporting strip secured to the frame above the tooth and diverging from the tooth at its free end, and a sleeve secured to the said strip and through which the tooth loosely projects, the said sleeve serving to check the rebound of the tooth when passing over an obstruction, as set forth.

3. In a cultivator, the combination, with a frame, and plates having opposing clutch faces secured to the frame, of a spring tooth having an arch at its upper end, the said arched portion being located between the said clutch faces and in engagement therewith, a spring supporting strap conforming to the arched contour of the tooth and likewise located between the clutch faces, the spring strip being made to diverge from the body of the tooth, as and for the purpose specified.

4. In a cultivator, the combination, with a

frame and plates having opposing clutch faces  
secured to the frame, of a spring tooth having  
an arch at its upper end, the said arched por-  
tion being located between the said clutch  
5 faces and in engagement therewith, a spring  
supporting strip conforming to the arched  
contour of the tooth and likewise located be-  
tween the clutch faces, the spring strip being  
made to diverge from the body of the tooth,  
10 the free end of the spring supporting strip be-

ing provided with a sleeve through which the  
body portion of the tooth extends, whereby the  
rebounding of the tooth will be checked when  
the tooth has passed an obstruction, as and  
for the purpose set forth.

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JAMES ANDREW UNDERWOOD.

Witnesses:

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F. F. DENT.