

(No Model.)

2 Sheets—Sheet 1.

A. LINDGREN.
TONGUELESS WHEEL CULTIVATOR.

No. 455,754.

Patented July 14, 1891.

Fig. 1.

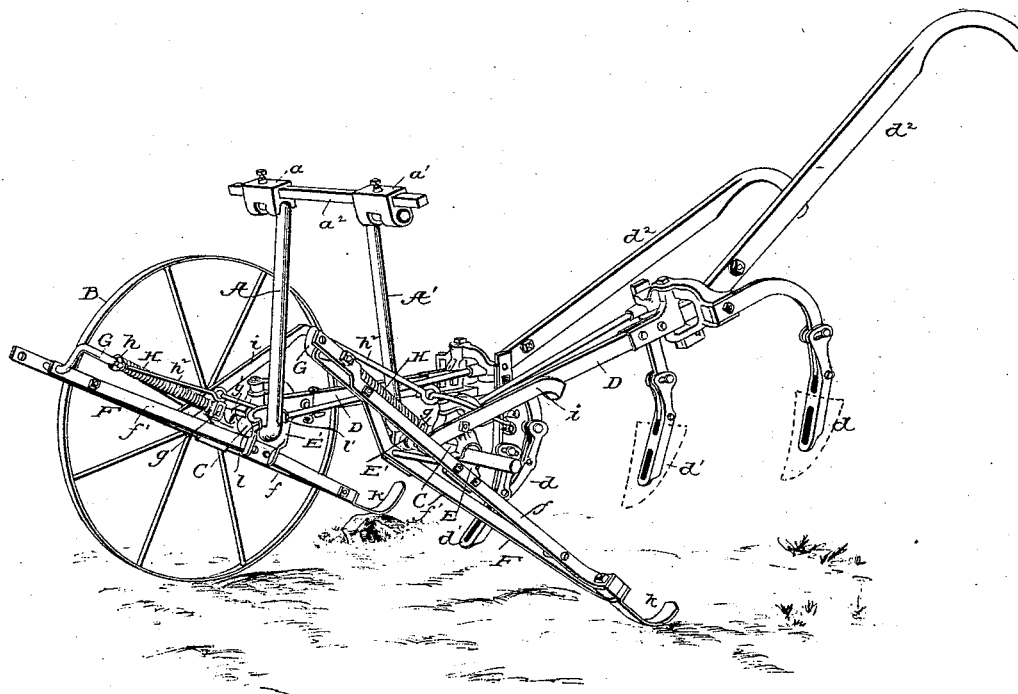
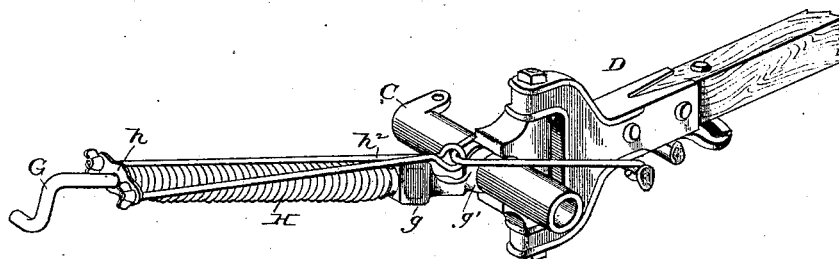


Fig. 3.



Witnesses:

William Wright Mortimer
Fabius Frank Elmore

Inventor:

August Lindgren
By his Atty
Phil. T. Dodge

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

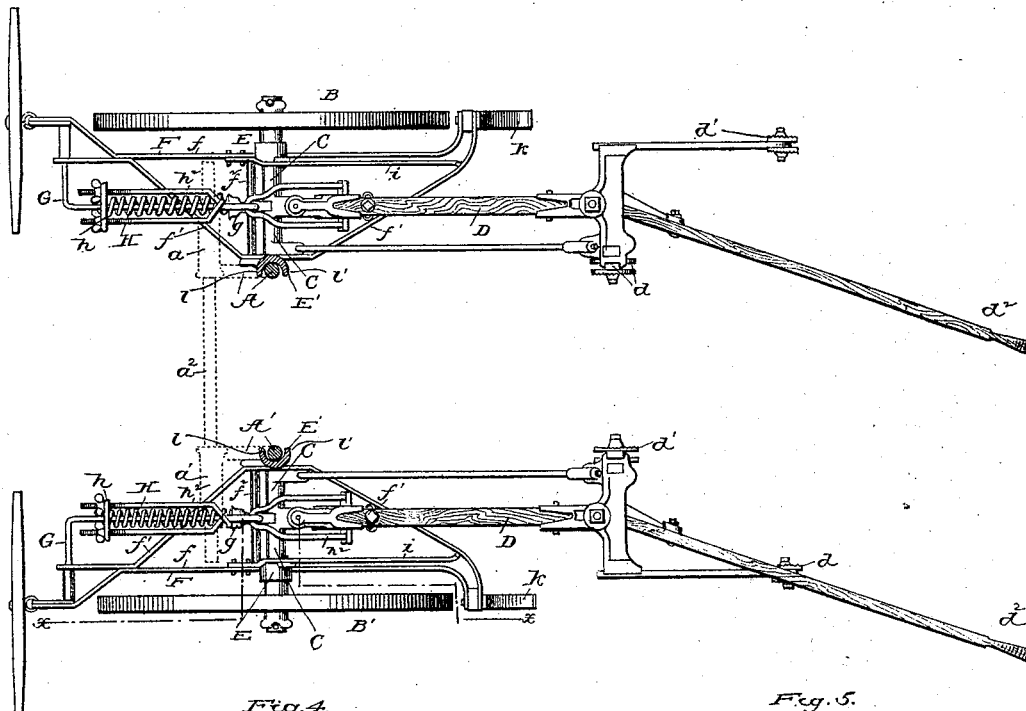


Fig. 4.
on line x-x

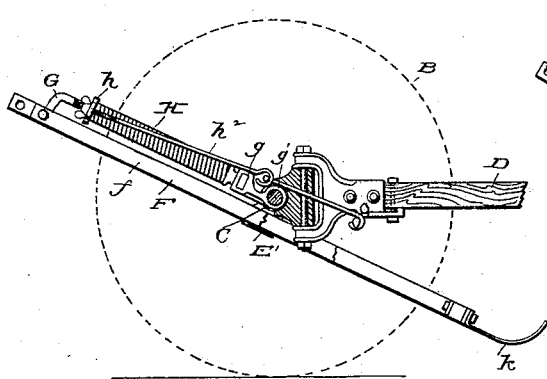
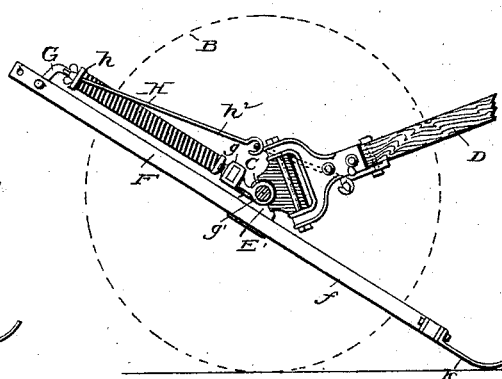


Fig. 5.
on line x-x



Witnesses:
William H. Mortimer
Fabius Stanley Elmore.

Inventor:
August Lindgren
By his Atty.
Rice T. Dodge

UNITED STATES PATENT OFFICE.

AUGUST LINDGREN, OF MOLINE, ILLINOIS, ASSIGNOR TO THE MOLINE PLOW COMPANY, OF SAME PLACE.

TONGUELESS WHEEL-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 455,754, dated July 14, 1891.

Application filed October 14, 1890. Serial No. 368,068. (No model.)

To all whom it may concern:

Be it known that I, AUGUST LINDGREN, of Moline, in the county of Rock Island and State of Illinois, have invented certain Improvements in Tongueless Wheel-Cultivators, of which the following is a specification.

This invention relates to tongueless wheeled cultivators in which a wheeled frame is provided with beams jointed at their forward ends to the frame, so that they can rise and fall with relation thereto.

The invention consists in providing a machine of this character with lifting-springs designed to assist in supporting the beams while in operation, in order to facilitate their control as to the depth of cut and to assist in raising the beams to an inoperative position when the machine is not in motion or on the cessation of the draft, the said springs being combined with draft-levers, hereinafter described in detail.

The invention also consists in the construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a cultivator with my invention embodied therein. Fig. 2 is a top plan view of the same. Fig. 3 is a perspective view of one of the lifting-springs and one of the connected levers detached. Fig. 4 is a sectional elevation on the line xx of Fig. 2, showing the relation of the parts when the machine is in operation. Fig. 5 is a similar view showing the relation of the parts with the beams raised to inoperative positions.

Referring to the drawings, $A A'$ represent vertical arms journaled at their upper ends in sleeves $a a'$, adjustably mounted on a horizontal connecting-bar a^3 . At its lower end each of these arms is bent and extended outward, forming the axles of the machine, on the outer ends of which are mounted ground-wheels $B B'$. As both arms and the parts carried thereby are duplicates, the description of one will suffice for both.

Between the ground-wheel and the vertical portion of the arm a sleeve C is loosely mounted, to which is attached by a vertical axis the forward end of a beam D , carrying at its opposite end the usual hoes or shoes $d d'$ and handle d^2 . The central portion of the

sleeve C is cut away or recessed, the purpose of which will presently appear.

Upon the axle, on either side of the sleeve C , are loosely mounted sleeves or collars $E E'$, to the under sides of which is rigidly bolted a draft-lever F , (shown in detail in Fig. 2,) provided at its lower end with a drag-shoe k , the office of which will hereinafter appear. The draft-lever consists of a straight bar f and a bow-shaped bar f' , which are bolted together at their upper and lower ends. They are strengthened at the center, where they are bolted to the collars $E E'$ by means of a rod f^2 . At its upper end the straight bar f extends outward some distance from the end of its companion bar f' , and the ends of both bars are perforated for the passage of the upper laterally-bent end of a spring-supporting rod G . This rod extends substantially parallel to the draft-lever to a point adjacent to the axle, where it is rigidly secured to the top of an arm g , which is provided with a perforated head g' , encircling the axle and seated within the recessed portion of the sleeve C , before referred to.

The rod G is encircled by a coiled spring H , the lower end of which is seated upon the top of the arm g . This spring is compressed by means of a washer h , loosely mounted on the rod above the spring and connected by a link h^2 to the under side of the beam. To the bar f of the draft-lever an arm i is bolted, which extends above the axle rearward, where it is bent laterally. Between its two ends this arm is bolted to an upward extension of the sleeve B' . The purpose of this arm is to support the beam when it is raised to an inoperative position.

From the foregoing description it will be seen that the draft-lever and the spring-supporting rod turns on the axle as an axis, which also forms the axis of the beam. Owing to this construction and to the connection between the spring-compressing washer and the beam, the spring in expanding will tend to lift the beam, and as the spring tends to expand at all times the result is that the beam is yieldingly sustained.

The operation of the machine is as follows: When in operation, the strain from the draft-animals attached to the upper ends of the

draft-levers tends to lower their upper ends to the position shown in Fig. 4. This action will cause the springs to be compressed, allowing the beams to descend to an operative position in the soil. When, however, the draft-levers are relieved from strain at their upper ends, the springs resume their expanded state and exerting a lifting action on the beam at the same time cause the upper ends of the draft-levers to ascend and the lower ends, carrying the drag-levers, to descend in contact with the ground, as shown in Fig. 5, in which position the parts remain. The beams can then be lifted and placed upon the arms *i*. It will be seen that when the machine is in motion the draft-levers are inoperative, as far as any action of the drag-shoes is concerned, and the beams are in operative position; but when the machine is not in motion and the draft-levers are relieved from strain the drag-shoes are automatically caused to come into operative position and the force of the springs permitted to be applied to assist in lifting the beams.

In order that the arched frame formed by the vertical portions of the arms A A' and the connecting-bar *a'* may be maintained in an upright position, the collars E, through which the arms pass at their lower ends, are formed with ears *l l'*, extending on each side of the arm. While these ears are constructed to admit of a limited amount of motion of the draft-levers with relation to the arms, they at the same time maintain the latter in a substantially upright position.

It is to be understood that while I have shown and described certain details of construction suitable for carrying into effect my invention the same may be modified within reasonable limits without departing from the spirit of the invention, provided the operation is substantially the same.

Having thus described my invention, what I claim is—

1. In a cultivator, the combination, with the beams which have a rising and falling movement, of lifting-springs and draft connections, said parts arranged to permit the springs to exert a lifting force on the beams on the cessation of the draft and to permit the beams to descend to operative positions on the application of draft.

2. In a tongueless cultivator, the combination of the wheeled frame, the beams connected thereto to rise and fall, the draft-levers, the lifting-springs thereon, and connections between the springs and the beams.

3. In a tongueless wheeled cultivator, the combination, with the axles, of the beams mounted thereon to rise and fall, the draft-levers also mounted on said axles and provided at their lower ends with the drag-shoes, the spring-sustaining rods connected at their upper ends to the draft-levers and mounted loosely on the axles at their opposite ends, the springs encircling the rods, and the links connecting the upper ends of the springs with the beams.

4. In a tongueless wheeled cultivator, the combination of a wheeled frame, the rising and falling beams D, mounted on horizontal axles, the draft-levers F, adapted to bear at their rear ends on the ground when not in action, the arms *i*, attached to the draft-levers to sustain the beams in an inoperative position, and the lifting-springs located between the draft-levers and the beams, whereby the springs are enabled to assist in lifting the beams out of action and also to assist in carrying them, when the machine is at rest, to the supporting-arms *i*.

5. In combination with the connecting-bar *a'*, the arms A A', jointed thereto to swing forward and backward and fastened into axles at their lower ends, the wheels, the beams coupled to the axles, the collars E, having ears to prevent the falling of the arms A A', and the draft-levers attached to the collars and extended rearward to rest upon the ground when relieved from the draft, whereby the draft-arms are caused to assist in maintaining the axle-arms.

6. In a tongueless cultivator, the combination, with the axle, of the beams provided at their forward ends with sleeves encircling the axle, said sleeves recessed at the center, the draft-eveners provided with sleeves mounted on the axle at each side of the first-named sleeves, the spring-sustained rods connected at their upper ends to the draft-eveners and provided at their lower ends with the perforated heads encircling the axles and seated in the recessed portion of the beam-sleeves, the coiled springs encircling the rod and seated at their lower ends upon the heads, and the links connecting the upper ends of the springs and the beams.

In testimony whereof I hereunto set my hand, this 16th day of September, 1890, in the presence of two attesting witnesses.

AUGUST LINDGREN.

Witnesses:

W. V. RICHARDS,
M. G. MARONEY.