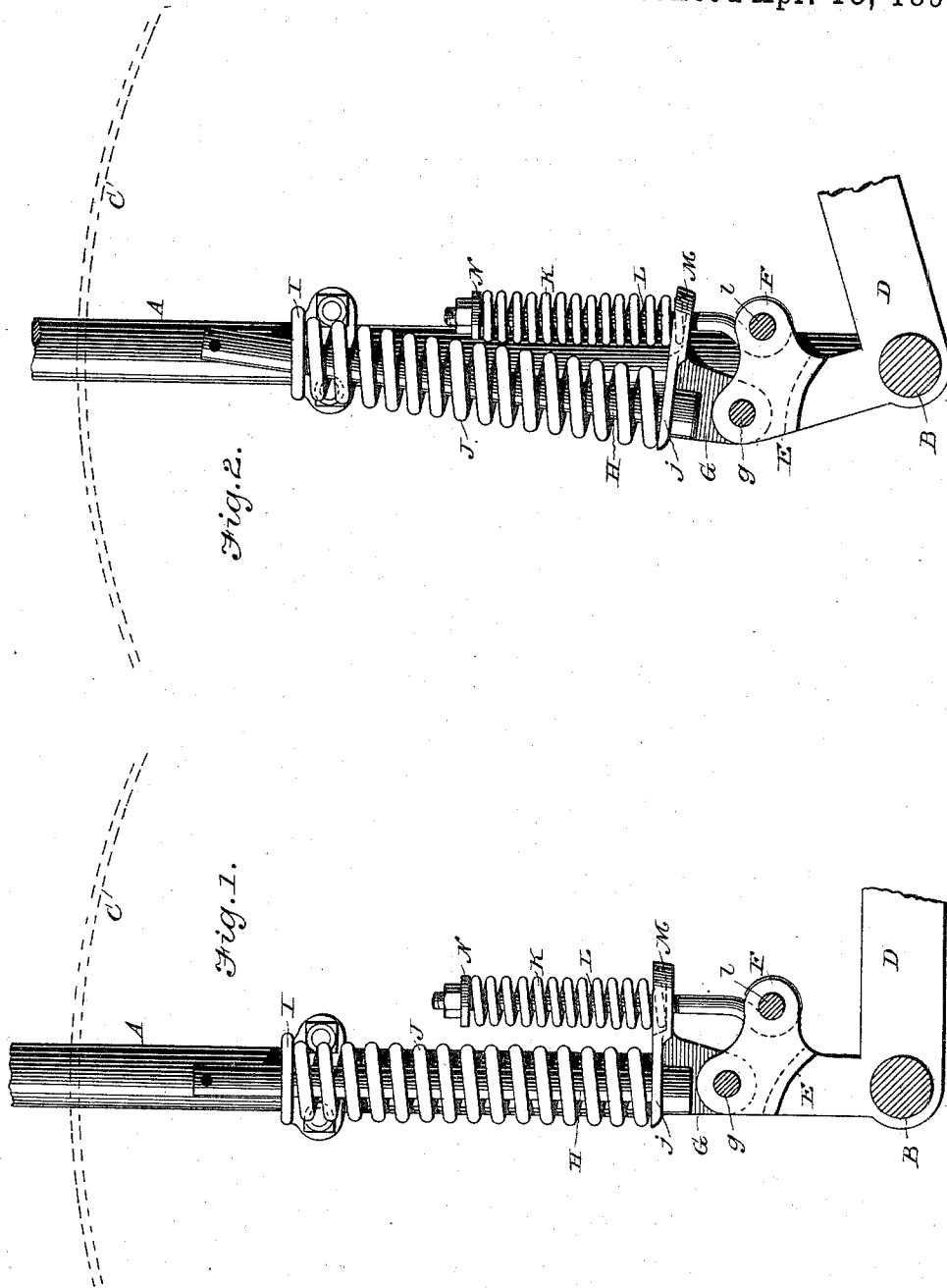


(No Model.)

A. LINDGREN.
LIFTING SPRING FOR CULTIVATORS.

No. 580,413.

Patented Apr. 13, 1897.



Witnesses
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UNITED STATES PATENT OFFICE.

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LIFTING-SPRING FOR CULTIVATORS.

SPECIFICATION forming part of Letters Patent No. 580,413, dated April 13, 1897.

Application filed January 29, 1897. Serial No. 621,238. (No model.)

To all whom it may concern:

Be it known that I, AUGUST LINDGREN, of Moline, county of Rock Island, and State of Illinois, have invented a new and useful Improvement in Lifting-Springs for Cultivators, of which the following is a specification.

This invention has reference to lifting mechanism for cultivator-beams; and it consists in combining with a vertically-movable beam two springs so constructed and arranged, in the improved manner hereinafter described, that when the beam is in a working position one of the springs will tend to sustain or suspend the same yieldingly, and when the beam is lifted the other spring will raise and hold the beam in an elevated position.

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

In the accompanying drawings, Figure 1 is a side elevation of a portion of a cultivator having my invention applied thereto, with the beam in a horizontal position. Fig. 2 is a side elevation of the same with the beam raised.

Referring to the drawings, I have shown my invention applied to the well-known straddle-row cultivator embodying an arched frame; but it will be understood that the invention is applicable as well to cultivators of other types wherein a vertically-movable beam is employed.

A represents an arched frame provided with horizontal arms B, sustained at their outer ends by the usual ground-wheels. (Not shown.) Between the arch and ground-wheels beams D are pivoted at their front ends in such a manner as to be capable of a pivotal vertical movement. At the front end each beam is provided with an arm E, extending, when the beam is in a horizontal position, vertically at right angles to the same, which arm is provided at its upper end with a rearwardly-extending lug F. To the upper end of this arm a plate G is pivoted on a horizontal axis *g*, and from this plate a rod H is extended vertically, its upper end passing through an opening in a guiding-lug I, fixed rigidly to the arched frame. The rod H is encircled by a spiral spring J, having its lower end seated and bearing on a flange *j*, fixed to

the plate G, and having its upper end bearing on the under side of the guiding-lug I.

The arrangement of the parts described is such that when the beam is in a horizontal working position, as shown in Fig. 1, its axis and the pivotal connection between the arm and plate will be in a vertical line, the spring in this position being practically inactive as far as any elevating or depressing action on the beam is concerned. When, however, the beam is lifted to the position shown in Fig. 2, the axis *g* passing the "center," the spring will come into action and will by pressing on the arm E raise the beam and hold the same in an elevated position. In connection with this spring, which I term a "lifting-spring," I employ a second spring K, which I term a "suspending-spring." It is so arranged that it will exert a constant lifting force on the beam. This spring is weaker than the one first described and encircles a rod L, pivoted at its lower end, as at *l*, to the lug F, whence it extends upward through an opening in a rearwardly-extending projection M on the plate G. The upper end of the rod is provided with a washer N, against which the upper end of the spring bears, while its lower end bears against the upper side of the projection M. This spring in tending to expand pulls constantly on the arm E at a point in rear of the axis of the beam, the result being that it in effect suspends the beam yieldingly, enabling it to pass readily over obstructions and preventing it from entering too deeply into the same.

It will be observed that by the construction and arrangement described when the beam is in a horizontal working position the lifting-spring is substantially inactive and the suspending-spring will exert a constant lifting force on the beam. When the beam enters more deeply into the ground, the projection M, or point of bearing of the suspending-spring, and the lug E will separate, the result being that the spring, being compressed, will resist the separation of the parts and prevent the beam from entering to an undue extent in the ground.

Having thus described my invention, what I claim is—

1. The combination with a vertically-mov-

able beam, of a lifting-spring for raising and holding the said beam in an elevated position, a suspending-spring and suitable devices through which the suspending-spring acts
5 with a constant lifting force on the beam in rear of its axis.

2. The combination with the vertically-movable beam provided with the right-angular arm, of the plate pivoted to said arm, the
10 lifting-spring bearing on said plate, the suspending-spring and devices through which the suspending-spring acts on the arm in rear of the axis of the beam, with an upward force.

3. The combination with the vertically-
15 movable beam, of the right-angular arm fixed thereto, a plate pivoted to said arm, a lifting-spring bearing downward on said plate, a vertical rod pivoted to the arm in rear of the axis of the beam and a suspending-spring bearing
20 at its upper end against the rod and at its lower end against the plate.

4. The combination with the vertically-movable beam, of the right-angular arm fixed thereto and provided with a rearwardly-extending lug, a plate pivoted to said arm in
25 advance of the lug and formed with a rearwardly-extending perforated projection, a lifting-spring bearing downward on said plate, a vertical rod pivoted at its lower end to the lug on the arm and extending upward through
30 the projection on the plate, a washer on said rod and a suspending-spring encircling the rod and bearing at its upper end against the washer and at its lower end against the pro-
35 jection.

In testimony whereof I hereunto set my hand, this 23d day of January, 1897, in the presence of two attesting witnesses.

AUGUST LINDGREN.

Witnesses:

A. W. WAY,
F. G. ALLEN.