

**No. 657,313.**

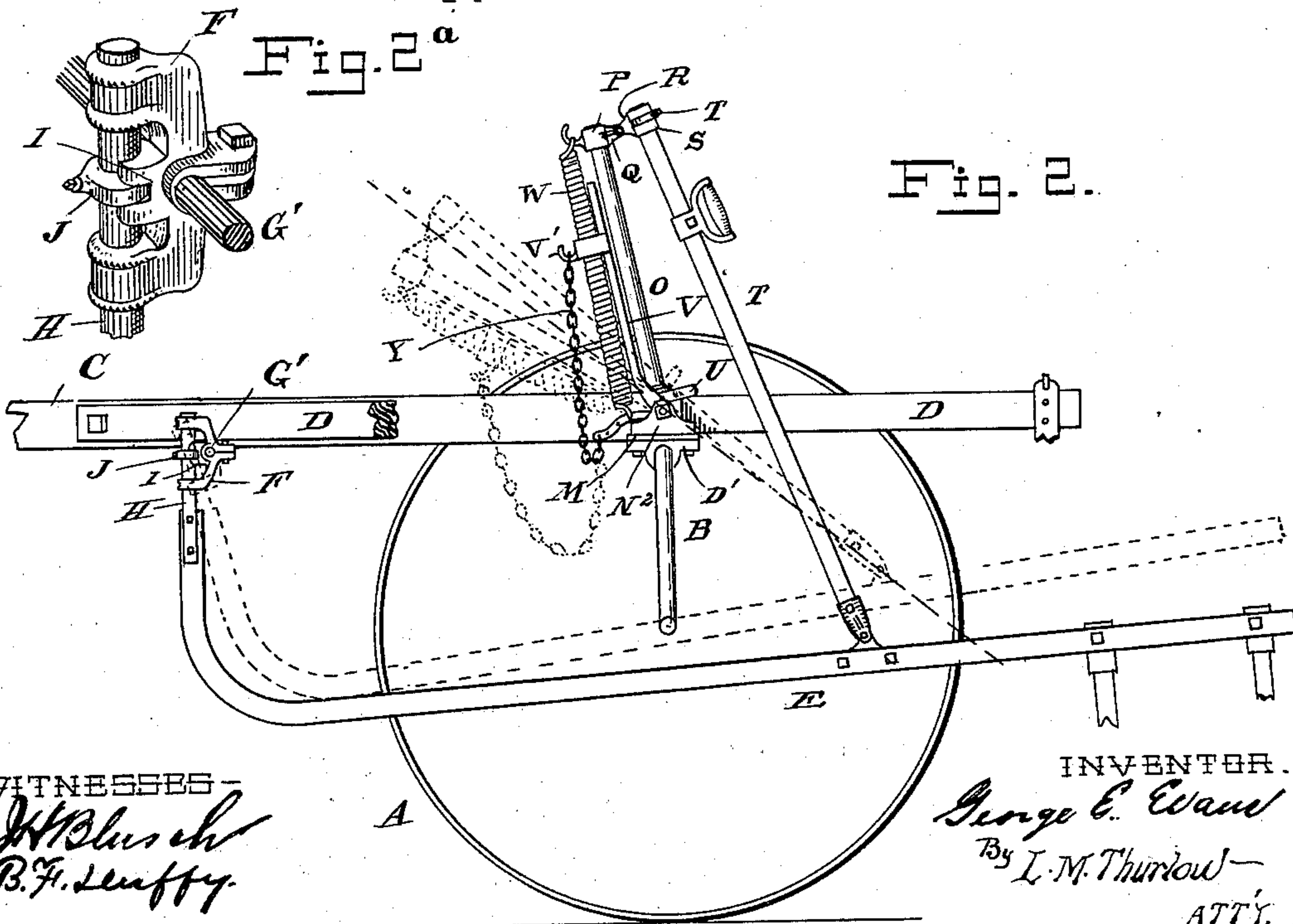
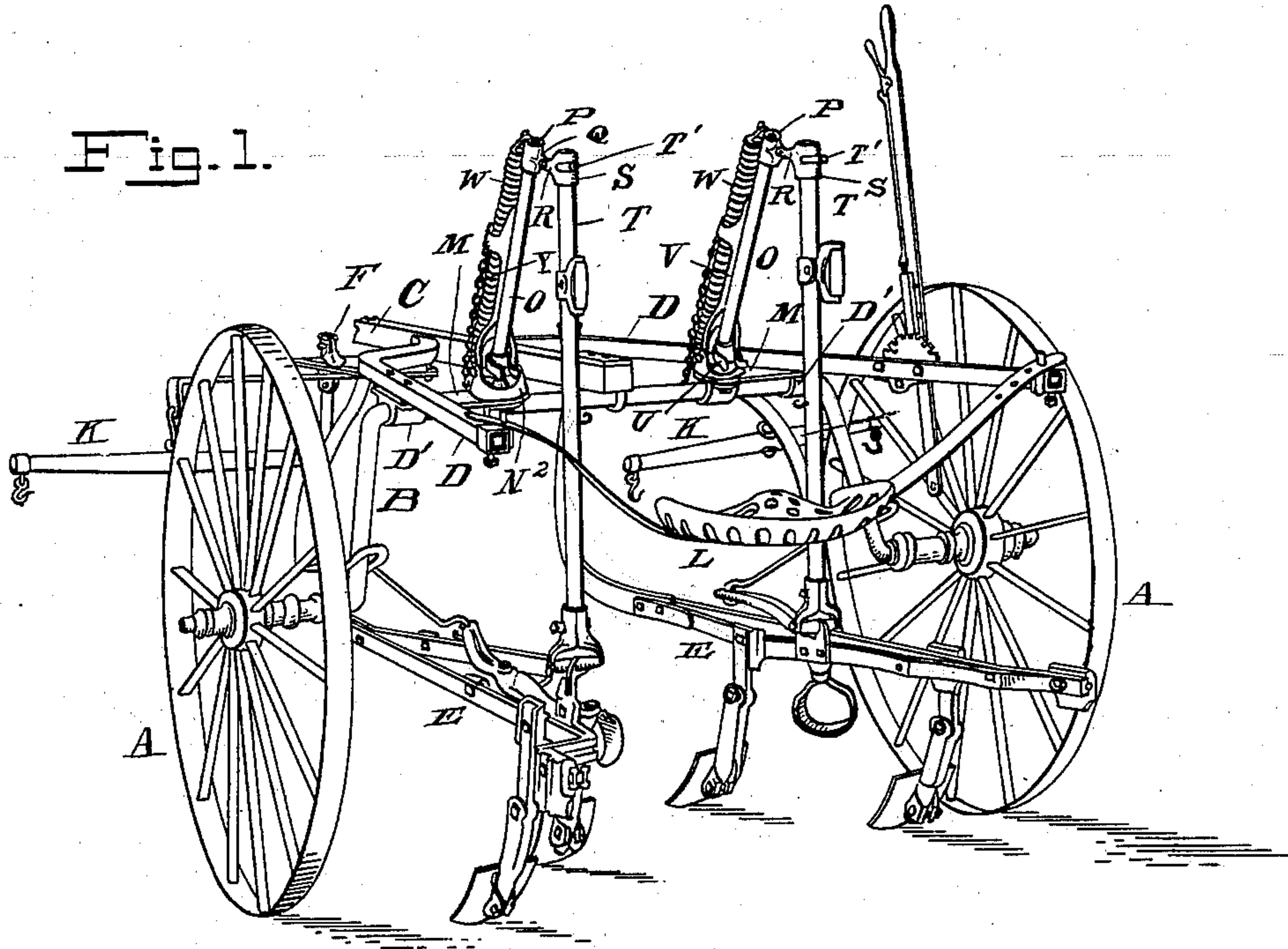
**Patented Sept. 4, 1900.**

**G. E. EVANS.**  
**CULTIVATOR.**

(Application filed Apr. 2, 1900.)

(No Model.)

**2 Sheets—Sheet 1.**



WITNESSES

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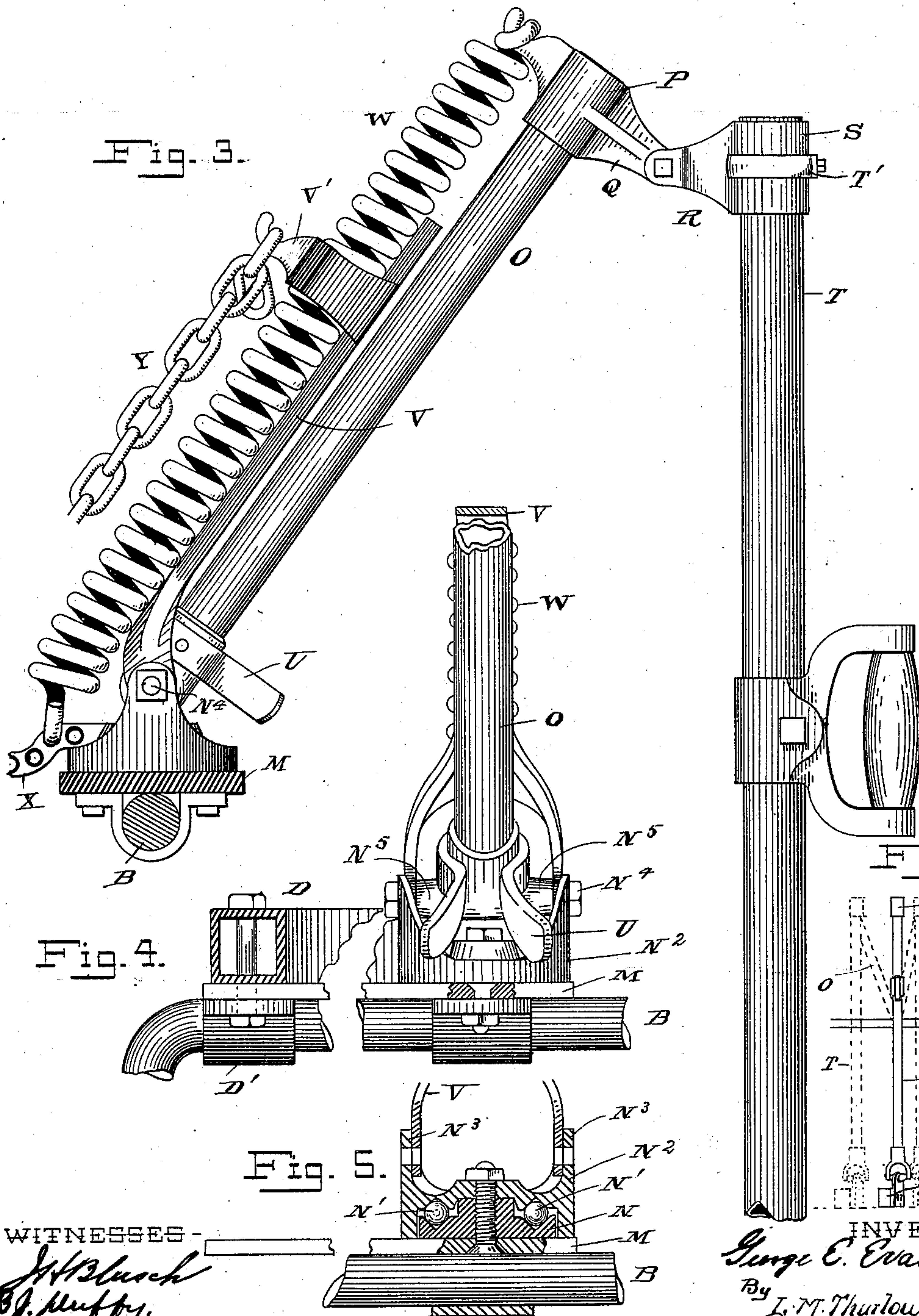
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# UNITED STATES PATENT OFFICE.

GEORGE E. EVANS, OF PEORIA, ILLINOIS, ASSIGNOR TO THE KINGMAN  
PLOW COMPANY, OF SAME PLACE.

## CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 657,313, dated September 4, 1900.

Application filed April 2, 1900. Serial No. 11,113. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE E. EVANS, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Cultivators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to cultivators, and more particularly to that class known as "wheel-cultivators."

It has for its object to provide means for carrying the cultivator-shovels in a horizontal plane during the lateral movements thereof instead of in an arc of a circle, as in usual practice. These lateral movements allow the shovels a range of movement in order to reach all portions of the ground between the growing plants. The means usually employed for accomplishing this is of such a nature that the shovels swing in the arc of a circle and in consequence of that movement cannot produce the best results. The pivotal connection from which the rear end of the shovel-beam is swung is the center from which the arc is described, and the lowest position of the shovels is immediately beneath that connection. A movement of the shovel-beam at either side of the position mentioned will evidently change the working depth of the shovels. The work performed under these conditions is obviously unsatisfactory. By my improved construction I am enabled to move the shovels in a horizontal line, with the result that the work done is perfectly uniform regardless of the extent of lateral movement. In addition to this my invention relates to certain details of construction and arrangement of parts more particularly pointed out in the claims.

In the appended drawings, Figure 1 is a perspective view of the cultivator. Fig. 2 is a side elevation thereof, showing the portions necessary to make my invention understood. Fig. 2<sup>a</sup> is a perspective view of a pivotal connection for the forward end of the shovel-beam. Fig. 3 is a side view of a crane for carrying the shovel-beam. Fig. 4 is a rear view of a portion of Fig. 3. Fig. 5 is a cross-section of a pivotal support shown in

Figs. 3 and 4. Fig. 6 is a rear elevation of the arrangement shown in Fig. 3, indicated in various positions to clearly show the horizontal movement of the shovel-beam.

In the figures, A A are the carrying-wheels, B the axle, and C the tongue.

D D are frame portions connected to the tongue near the forward end thereof. These serve to journal the axle by means of the boxings D'.

The shovel-beams shown at E E are carried at their forward unturned ends H in pivotal yokes F. Said yokes are adapted to swing in a vertical plane on a rod G', secured to the tongue and frame, and their extremities are arranged to receive the said forward upturned ends of the said beams E E, upon which are collars J, adapted to engage with notched lugs I, formed with said yokes to prevent separation of the parts. This arrangement allows the beam to swing in all directions with perfect freedom; but other means than this may of course be used.

The usual draft attachments and seat K and L, respectively, are shown in Fig. 1, the latter being hung from the rear extremities of the frame portions D. Plates M are securely bolted to the portions D, together with the boxings D', as shown in Fig. 4, and virtually form part of the implement-frame. Said plates extend toward the middle of the machine, and on the free extremity of each is mounted a standard of any desired construction that will readily permit a free sidewise movement of a crane, consisting, preferably, of an arm or mast O, having a sleeve P on its upper extremity. Such sleeve carried a rearwardly-projecting lug Q, having the forked extremity R of a similar sleeve S pivoted thereto. The latter sleeve loosely carries a rod T and is bifurcated to receive a collar T', secured to such rod by means of a set-screw or other suitable device. By this or kindred means free movement of said rod within the sleeve is permitted, but at the same time prevents its withdrawal therefrom. The lower extremity of the rod is pivotally attached to the shovel-beam E, as shown in Figs. 1 and 2, and a suitable handle is secured thereto, by which the operator may swing the said beam from side to side for the purposes described. Since the beam E is pivoted at its



forward end, a lateral movement at its rear end will naturally turn the rod T axially. Therefore by reason of the said rod having connection with the arm O suitable means for

5 allowing a swivel movement must be provided, and hence the construction above described.

The means for pivotally carrying the mast O may be of any desired form, as before stated; 10 but I prefer to employ a plate or table N, mounted on the plate M, on which the cup N<sup>2</sup>, having upward projections N<sup>3</sup>, is adapted to revolve by means of a series of balls N<sup>1</sup>. A suitable bolt serves to hold the plate N and 15 the cup N<sup>2</sup> in position, but at the same time allows free movement of the latter. The arm or mast is supported by means of trunnions N<sup>5</sup>, secured at its lower end and held between the extremities N<sup>3</sup> of the cup N<sup>2</sup> by means of 20 a bolt N<sup>4</sup>. A fork U, rigidly secured to the arm in the position shown, is employed for receiving the rod T, as will be presently understood. A forked arm V is pivoted between the trunnions and the projections N<sup>3</sup>, and its 25 office is to limit the downward movement of the cultivator-shovels by means of a chain Y, hung from a hook V' on such arm and attached to the end of an arm X on the cup N<sup>2</sup>, as shown in Fig. 2. A spring W is attached to 30 a projecting hook at the top of the mast O and at the other to the said arm X and serves to balance the weight of the shovel-beam and attachments. The tension of the spring is such that when the portion T occupies a ver- 35 tical position and the arm or mast O is inclined rearwardly at the greatest angle it is drawn out nearly to its limit and there sustains the greatest weight. As said arm approaches nearer the perpendicular position the 40 weight attached to it is reduced and the spring is not called upon to carry as much weight and is laxed by reason of the shortening of the distance between its ends. By this means the tension is always sufficient to balance the 45 weight supported by it. The limit of downward movement of the shovels may be varied by changing the length of the chain; but if for any reason it is desired to have the shovels "float" the chain is uncoupled.

50 Fig. 2 shows the position of the beam E when not in use. The handle of the rod T is merely pushed forward, thus causing the arm O to swing on its pivot until carried to the position shown in dotted lines. It will be 55 noticed that in that position the pivotal connection between the arm or mast O and the rod T is carried below the line of the lower pivot of the said arm or mast and the pivotal connection of the rod T with the beam E. 60 In this position the device is locked in position for transportation and it will be understood that since the pivotal connections are thrown out of line the weight of the beam E will be sustained in the position shown. At 65 such times the spring W is entirely laxed.

Fig. 6 indicates the movements of the rod T and beam E, in dotted lines showing the

horizontal movement of the said beam; but this will be readily understood.

The mast O operates after the manner of a 70 crane and carries the shovel-beam with ease and precision. I may use other methods than shown and described for carrying such mast, and I may provide other means than this for carrying the shovels in a horizontal plane. 75

The fork U, before described, serves to receive the rod T and hold it against sidewise displacement.

The various other portions of my construction may be changed at will without depart- 80 ing from the spirit of the invention; but

What I claim as new, and desire to secure by Letters Patent, is—

1. A cultivator having means for carrying its shovel-beams at their forward ends in piv- 85 otal manner, a support for the rear ends of said beams, such support being revolubly mounted on the frame in such manner as to cause said beams to swing in a horizontal plane. 90

2. A cultivator having mechanism for carrying the shovels thereof in a horizontal line when moved laterally, consisting of means revolubly mounted on the frame and adapted to move in a horizontal plane, and an arm or 95 mast pivotally connected with such revoluble means for supporting the shovels.

3. A cultivator having means for carrying its shovels in a horizontal plane when swung laterally while at work in the ground, such 100 means consisting of a horizontally-revoluble pivot located on the cultivator-frame and a shovel-beam hung loosely from such revoluble pivot.

4. A cultivator having means for carrying 105 the cultivator-shovels in a horizontal line, when moved from side to side, which consists of an arm mounted on end on the implement-frame and adapted for a partial revoluble movement thereon as set forth, a shovel-beam 110 hung from the implement-frame and having pivotal connection with the said revoluble arm for the purposes set forth.

5. In a cultivator, an arm, pivotally mount- 115 ed on end on a revoluble base and adapted to have a partial revoluble movement by means of such base, a rod pivoted to the upper free end of the arm, and a shovel-beam pivotally attached to the lower end of said rod.

6. In a cultivator, an arm pivotally mount- 120 ed on end on a revoluble base, and adapted to have a partial revoluble movement by means of such base, a rod, or support, pivoted to the upper free end of the arm, a shovel-beam piv- 125 otally attached to the said rod, and means for governing and limiting the downward movement of the said shovels for the purpose described.

7. A cultivator having a revoluble support adapted to swing in a horizontal plane, an up- 130 wardly-projecting arm pivoted to such support, a depending rod pivoted to the upper free end of such arm, a shovel-beam hung from the rod, means for sustaining and bal-



ancing the weight of the parts described, for the purposes set forth, and means for limiting the downward inclination of such parts.

8. In a cultivator, an arm mounted on end  
5 on a revoluble base or support on the cultivator-frame and adapted for a partial revoluble movement on said frame by means of such base or support such arm being adapted also to have a vertical pivotal movement on  
10 the base, a shovel-beam pivoted to the cultivator-frame and a hanging connection between the said arm and shovel-beam for carrying the latter by means of the former substantially as set forth and for the purposes described.  
15

9. In a cultivator means for supporting the shovels thereof and compelling them to move in a horizontal line when swung laterally consisting of an arm, or mast, mounted on the cultivator-frame and partially revoluble thereon  
20 in a horizontal plane and adapted for movement in a vertical plane, a shovel-beam beneath connected to, and adapted to move with said arm, a spring for supporting the mast and  
25 means for limiting the downward movement of the shovels substantially as described.

10. In a cultivator an arm, or mast, pivoted at one end on a revoluble support mounted on the implement, a spring for supporting the mast in a substantially-upright position, a shovel-beam pivoted at its forward end to the implement-frame ahead of the said arm or mast, a depending rod interposed between the arm and the rear end of the shovel-  
35 beam; said mast and rod adapted to collapse and lie substantially parallel with each other, the pivotal connection between them passing forward of the lower pivotal support of said arm and below the line of the said pivotal  
40 support and the pivotal connection of said rod with the shovel-beam, whereby the shovels are raised from the ground and sustained.

11. In an implement of the character described, an arm, or mast revolubly mounted  
45 on the implement-frame, substantially as described, a depending connection hung therefrom, a shovel-beam pivotally attached to the said connection, the mast and connection adapted to be thrown forward and locked  
50 ahead of the pivotal support of the arm, whereby the shovels are raised from the ground and held for the purpose described.

12. In a cultivator, the combination of the revoluble cup N<sup>2</sup> mounted on the frame, the mast O pivoted thereto, the depending rod T  
55 pivotally hung from the upper extremity of the mast, substantially as shown, a spring secured to the cup portion N<sup>2</sup> and the top of the mast, for the purpose described, means for limiting the downward movement of the mast,  
60 and a shovel-beam attached to the lower extremity of the rod T and pivotally hung at its forward end from the implement-frame substantially as described.

13. In a cultivator, the combination of the  
65 revoluble cup N<sup>2</sup>, mounted on the implement-frame, the mast O pivoted thereto, the arm V pivoted to said cup, the arm X formed with the cup, a spring connected at one end to the said arm and at the other to the mast, a chain  
70 attached at one end to the said arm X and at the other to the arm V for the purposes described, the rod T pivoted to the upper end of the mast and the shovel-beam attached to the said rod all substantially as set forth and  
75 described.

14. In a cultivator, means for pivotally supporting the shovel-beam at its forward end which consists of a yoke adapted to rock in a vertical plane and arranged to receive the  
80 forward extremity of said shovel-beam and permit pivotal movement thereof in a plane at right angles to the movement of said yoke.

15. In a cultivator, a yoke F adapted to rock in a vertical plane, the shovel-beam carried in said yoke and adapted to have pivotal movement therein in a plane at right angles to the movement of such yoke and means for preventing separation of the yoke and beam  
85 substantially as set forth.

16. In a cultivator, the yoke F adapted to rock in a vertical plane, the shovel-beam carried in the extremities of said yoke and adapted for pivotal movement therein, projecting  
90 lug I on the yoke and a collar J secured to the beam for the purpose set forth and described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE E. EVANS.

Witnesses:

S. H. HUNT,  
D. E. ORR.