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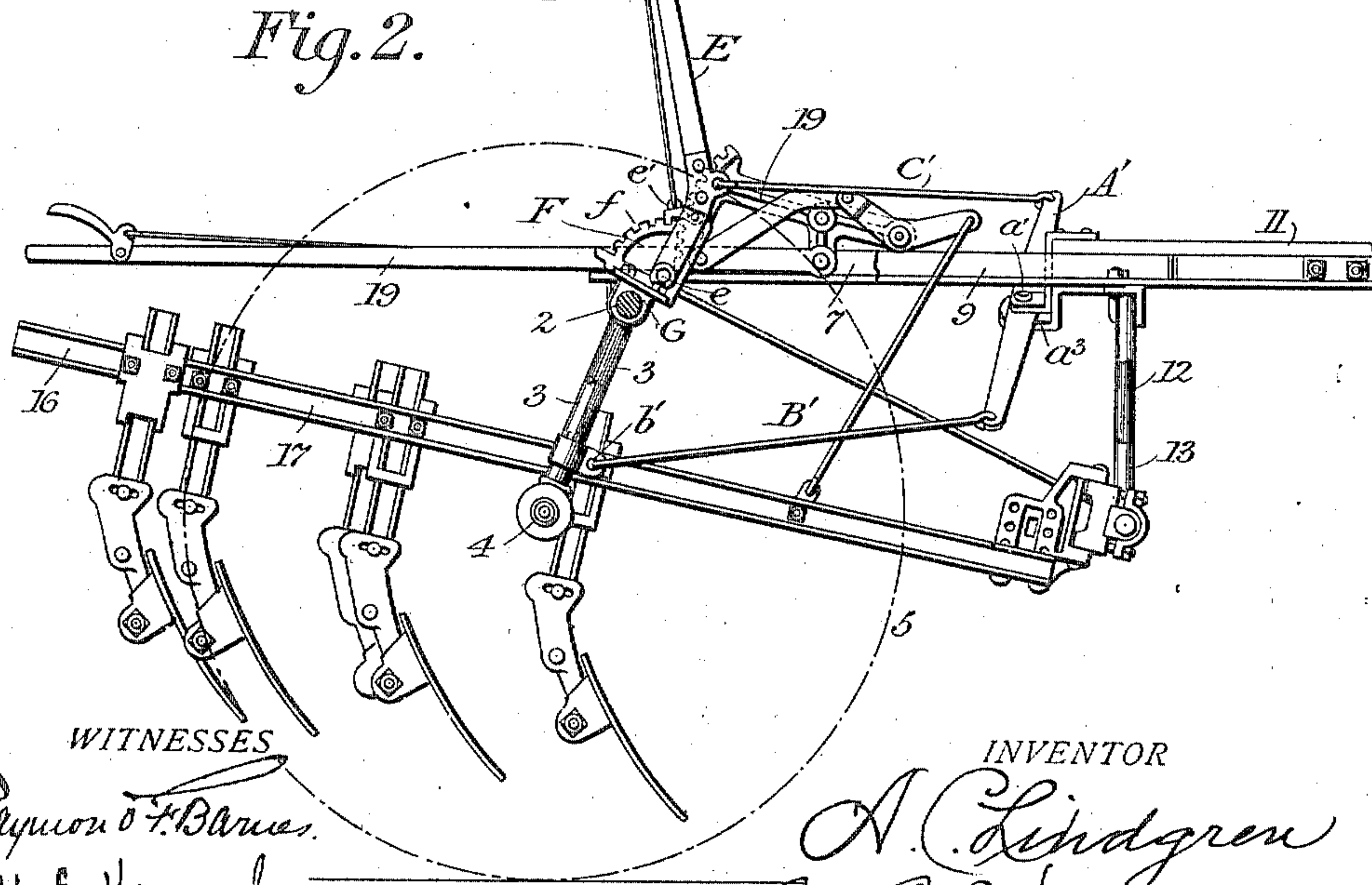
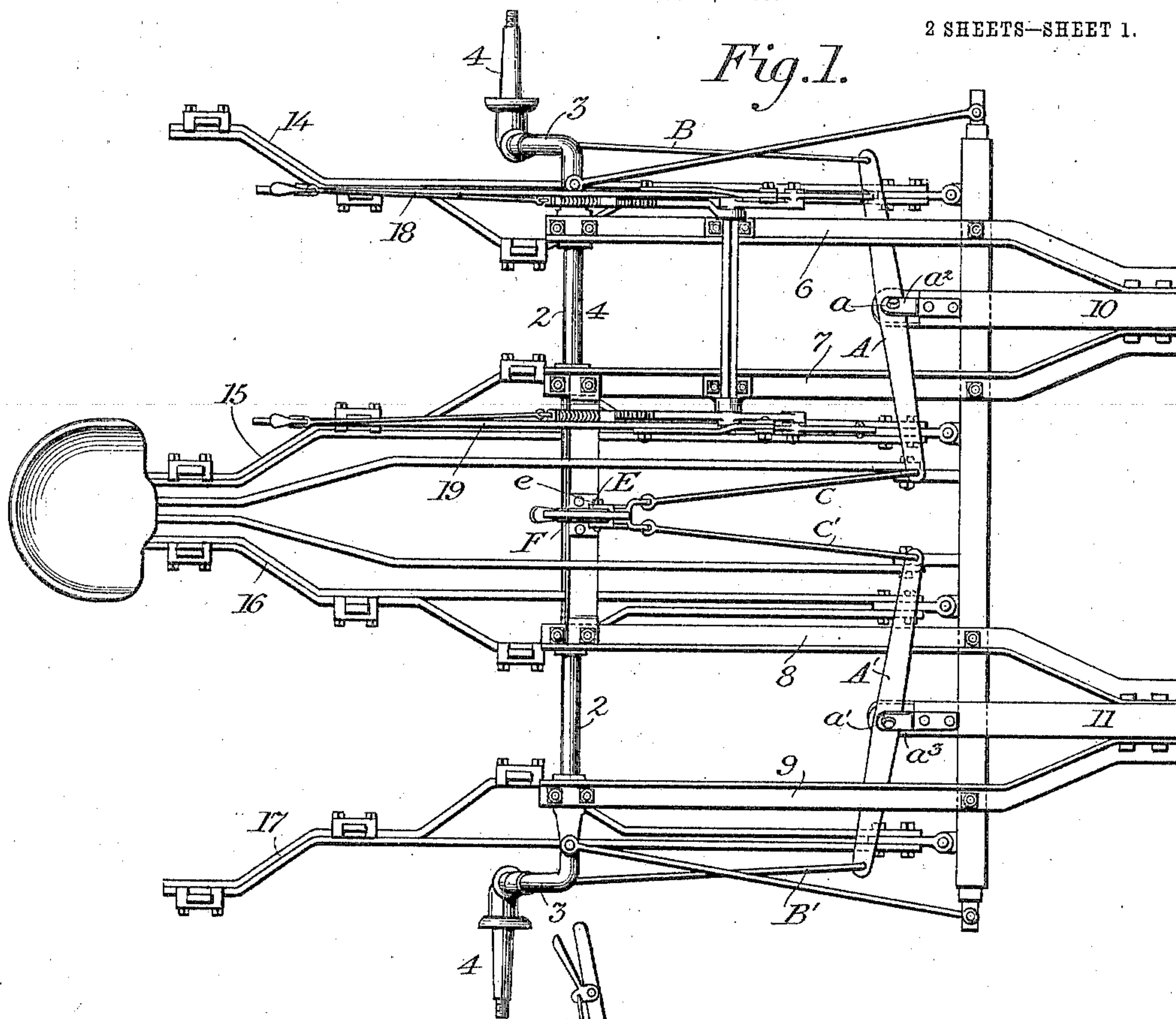
PATENTED APR. 3, 1906.

A. C. LINDGREN.

BALANCING MECHANISM FOR WHEEL CULTIVATORS.

APPLICATION FILED NOV. 23, 1905.

2 SHEETS—SHEET 1.



WITNESSES

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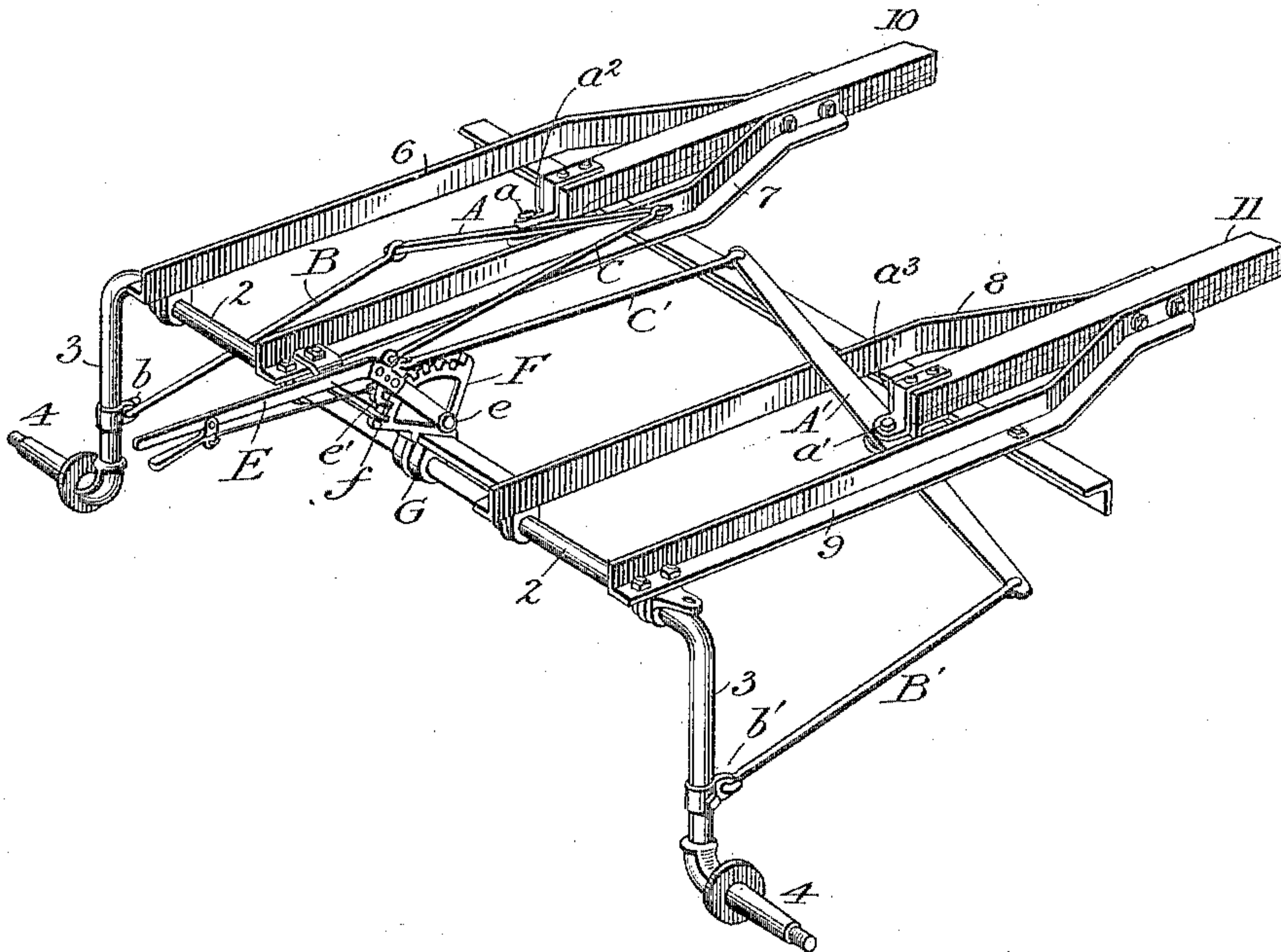
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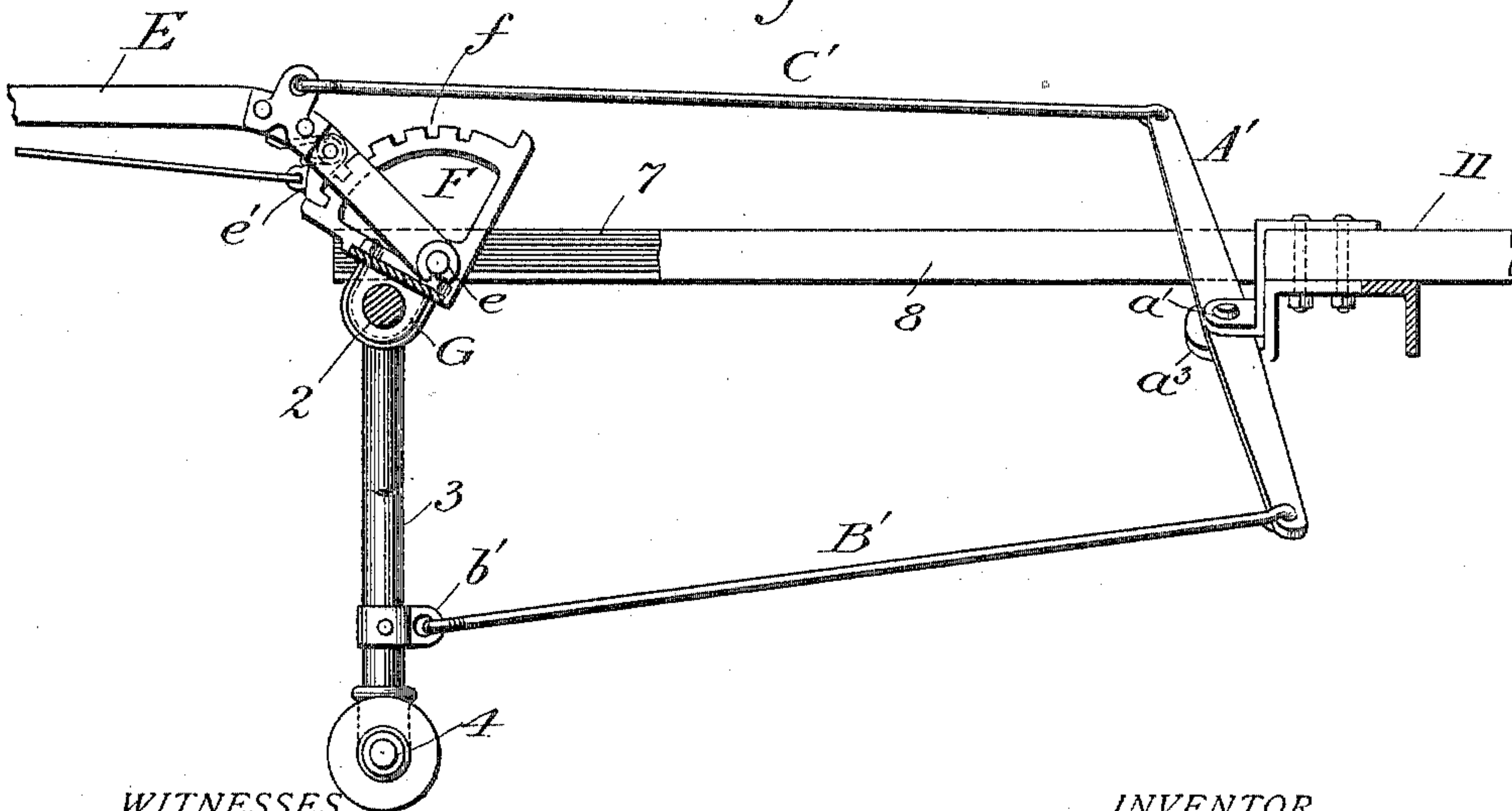
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2 SHEETS—SHEET 2.

*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

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## BALANCING MECHANISM FOR WHEEL-CULTIVATORS.

No. 816,868.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed November 23, 1905. Serial No. 288,694.

*To all whom it may concern:*

Be it known that I, ALEXUS C. LINDGREN, of Moline, county of Rock Island, and State of Illinois, have invented a new and useful  
5 Improvement in Balancing Mechanism for Wheeled Cultivators, &c., of which the following is a specification.

In the use of wheeled cultivators provided with means for elevating the beams the draft  
10 of the team when the beams are lowered and in action has a tendency to pull the pole downward and subject the animals to severe neck weight, and when the beams are raised their greater weight, being back of the wheel-  
15 center, causes the pole to tip upward.

It is the aim of my invention to overcome these objections; and the invention consists of mechanism of improved form and construction under the control of the driver, by  
20 means of which the ground-wheels may be shifted with reference to the frame of the machine so as to change the center of gravity and properly balance the beams, in the one case, when the beams are raised, preventing  
25 the pole from tipping upward, and in the other case, when the beams are lowered and in action, avoiding the tendency of the draft to pull the pole downward and subject the animals to neck weight.

In the accompanying drawings I have illustrated my invention as applied to a two-row cultivator, in connection with which the invention is peculiarly effective; but it is manifest that it is applicable as well to a single-  
35 row cultivator and to machines of an analogous character, such as wheeled plows, where there may be occasions for balancing the weight of the plow-beams when they are raised, as in turning at the end of the field or  
40 when the machine is transported from field to field and for relieving the draft-animals of neck weight.

Referring to the drawings, Figure 1 is a top plan view of a wheeled cultivator having  
45 my invention embodied therein with the parts in the position they occupy when the beams are raised out of action. Fig. 2 is a side elevation of the same with one set of beams raised. Fig. 3 is a perspective view  
50 of a portion of the frame of the machine having my invention applied with the parts in the position they occupy when the beams are

lowered and in action. Fig. 4 is a longitudinal sectional elevation of the same on an enlarged scale.

In the drawings, 2 represents a supporting-  
55 axle having an arched portion and two cranked downwardly-extending ends 3, provided with wheel-spindles 4, on which are mounted ground-wheels 5. The axle gives  
60 support to a frame comprising four longitudinal frame-bars 6 and 7 and 8 and 9, arranged in pairs on opposite sides of the center of the axle, the bars of each pair being clipped  
65 at their rear ends to the axle in such manner that the latter is capable of a rocking motion and have their opposite ends fixed to two  
draft-tongues 10 and 11.

Suitably supported on the lower ends of two hangers 12 and 13, depending from the  
70 front part of the frame, are four cultivator-beams 14 and 15 and 16 and 17, adapted to be raised and lowered by lever mechanisms 18 and 19, sustained by the frame and under  
75 the control of the driver, who, by the manipulation of said lever mechanisms, may raise and lock the beams in elevated position.

When the beams are lowered and in action, the draft of the team tends to draw the tongue  
80 downward and subject the draft-animals to neck weight, and when the beams are raised the draft cannot hold the pole down, and, further, the greater weight of the beams being  
85 back of the wheel-center the pole is caused to tip upward. In order to counteract this objectionable action of the pole under the changing conditions mentioned, I provide mechanism for shifting the ground-wheels forward and  
90 backward, so as to change the center of gravity of the frame. This mechanism comprises two horizontal transversely-arranged equalizing bars or levers A A', arranged end to end and pivoted about midway between their  
95 ends on vertical axes  $a a'$  to brackets  $a^2$  and  $a^3$ , fixed, respectively, to the rear ends of the draft-tongues. At the outer ends the levers  
100 have jointed to them the forward ends of links B B', whose rear ends are jointed to the lower extremities of the downwardly-extending cranked portions of the axle, as at  $b b'$ . At their inner ends the said levers A A' have jointed to them the forward ends of two parallel bars C C', the rear ends of which are jointed to a hand-lever E, pivoted at its lower



end, as at *e*, to a segment-frame *F*, fixed to a sleeve or collar *G*, and surrounding the arched portion of the axle between the two inner frame-bars 7 and 8, to which said sleeve is  
 5 firmly attached. The segment-frame is provided with teeth *f*, adapted to be engaged by a locking-dog *e'* on the hand-lever *E*.

When the cultivator is in action with the beams lowered, the cranked portions of the  
 10 axle are moved forward and stand in an upright position, as indicated in Fig. 4, while the hand-lever *E* extends horizontally rearward within reach of the driver, with its locking-dog engaging between the teeth of the segment-  
 15 frame and holding the axle in the position shown fixedly with reference to the frame. When the beams are to be elevated to turn the machine at the end of the row or for other purposes, the driver manipulates the  
 20 lever mechanisms 17 and 18 and locks the parts, and thus suspends the beams. The additional weight of the beams in rear of the wheel-center will now tend to throw the tongue upward at the front, and to counter-  
 25 act this action the driver unlocks hand-lever *E* and pushes forward on the same, which action will force the inner ends of the two levers *A A'* forward and will throw their outer ends rearward, thereby forcing the cranked axles  
 30 rearward and correspondingly shifting the ground-wheels, with the result that the parts will be evenly balanced and the weight of the beams prevented from tipping the tongue upward, the lever *E* being locked to the seg-  
 35 ment-frame in order to hold the wheels in their shifted position. When the beams are again lowered for action, the lever is released and pulled rearward to its former position and the parts locked.

40 The bracket-supports for the equalizing-levers are so formed as to sustain them at an inclination downward at the outer ends in order to bring the outer ends as near as possible to the level of the extremities of the  
 45 cranked portions of the axle, where the links *B B'* are connected. The purpose of this arrangement and construction is to prevent the cranked portions of the axle in their move-  
 50 ments back and forth from causing the equalizing-levers to bind at their pivotal points, the outer ends of the levers moving in line, or nearly so, with the movements of the cranks and not at an angle to the same, which would be the case if the levers were in a truly hori-  
 55 zontal position and their outer ends at a considerably higher level than the extremities of the cranks.

It will be observed from the construction described that the axle is so connected at its  
 60 arched portion to the frame and so sustained thereby that the former is capable of a slight rocking motion, which rocking motion is controlled by the hand-lever *E* and effects the movement or shifting of the ground-wheels

with reference to the frame, the wheels being 65 locked by the hand-lever in the position to which they may be moved.

Having thus described my invention, what I claim is—

1. In combination with the frame, wheel- 70 spindles provided with supporting ground-wheels movable back and forth with reference to the frame, an adjusting-lever sustained by the frame, operative connections between the adjusting-lever and the wheel-spindles, 75 said connections including two levers pivoted between their ends to the frame, and vertically-movable beams sustained by the frame.

2. In combination with a frame, wheel-spin- 80 dles having supporting-wheels movable back and forth with reference to the frame, an adjusting-lever mounted on the frame, two horizontal pivotal levers also mounted on the frame, and operatively connected with the adjusting-lever and with the wheel-spindles, 85 and vertically-movable beams sustained by the frame.

3. In combination with a frame, an axle mounted therein and provided with cranked ends movable back and forth, wheels mount- 90 ed on said axle, a hand-lever sustained by the frame, transversely-arranged levers mounted on the frame and operatively connected with said hand-lever and with the cranked ends of the axle and vertically-movable beams sus- 95 tained by the frame.

4. In combination with the frame, an axle mounted therein and provided with cranked ends movable back and forth, ground-wheels 100 on said axle, a hand-lever, transversely-arranged equalizing-levers mounted on the frame, connections between the inner ends of the equalizing-levers and the hand-lever, con- 105 nections between the outer ends of the equalizing-levers and the cranked ends of the axle and vertically-movable beams sustained by the frame.

5. In combination with the frame, an axle mounted therein and formed with cranked ends movable back and forth ground-wheels 110 on the ends of the axle, transversely-arranged levers pivoted between their ends to the frame and inclining downward at their outer ends, connections between the outer ends of the levers and the cranked ends of the axle, 115 a hand-lever on the frame, connections between said hand-lever and the inner ends of the transverse levers and vertically-movable beams connected with the frame.

6. In a wheeled cultivator, the combina- 120 tion of the frame, an axle mounted to rock therein and formed with cranked ends, ground-wheels on the ends of the axle, a draft-tongue extending forwardly from the frame, transversely-arranged levers pivoted 125 between their ends on the frame and disposed end to end, links connecting the outer ends of the levers with the cranked ends of the axle,



a hand-lever pivoted to the frame, means for locking said lever fixedly to the frame, rods connecting said lever with the inner ends of the transverse levers, and cultivator-beams  
5 connected with the frame and movable vertically.

In testimony whereof I hereunto set my

hand, this 18th day of October, 1905, in the presence of two attesting witnesses.

ALEXUS C. LINDGREN.

Witnesses:

J. L. IRVING,  
P. M. PRICE.