

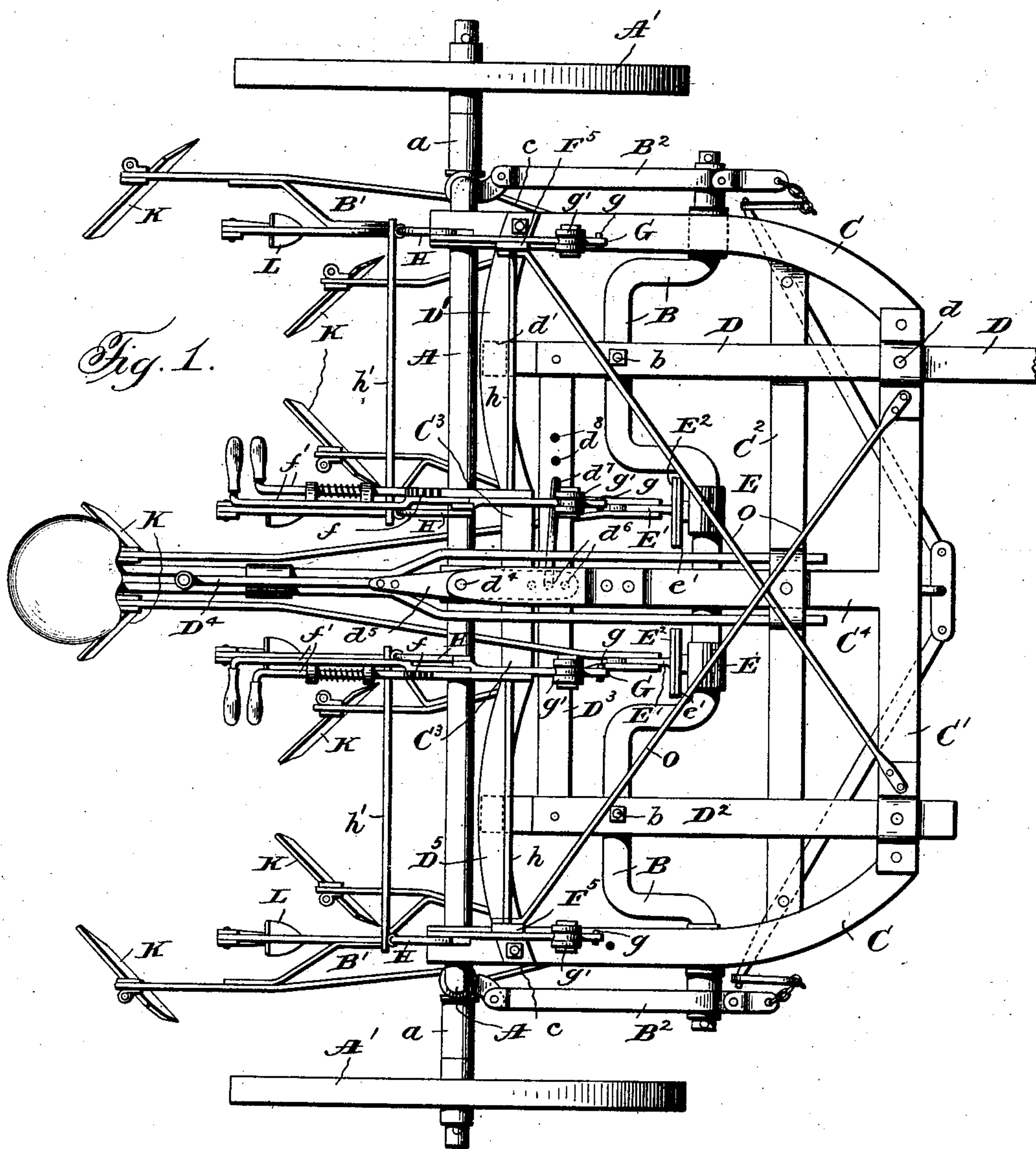
No. 755,737.

PATENTED MAR. 29, 1904.

F. L. BLOCK.
WHEEL CULTIVATOR.
APPLICATION FILED MAY 9, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses:
Jas. Hutchinson
H. E. Montague.

Inventor:
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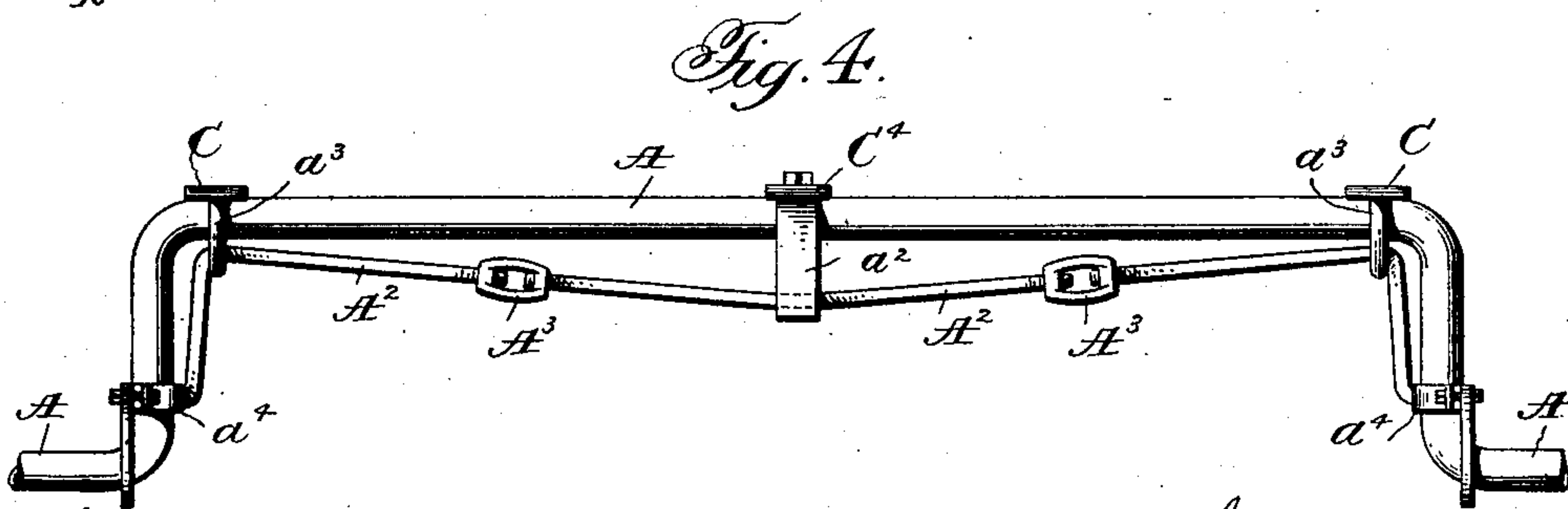
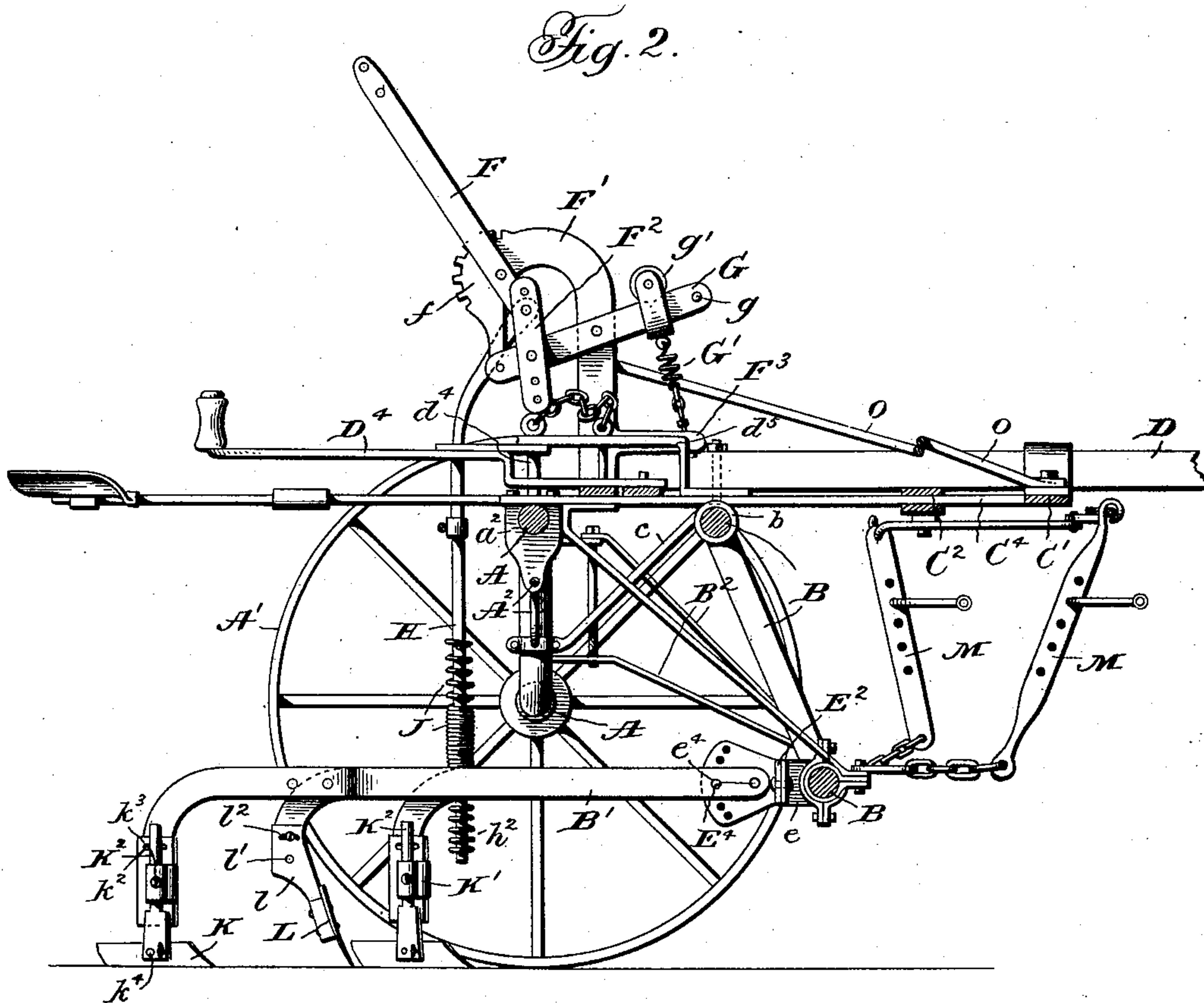
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4 SHEETS—SHEET 2.



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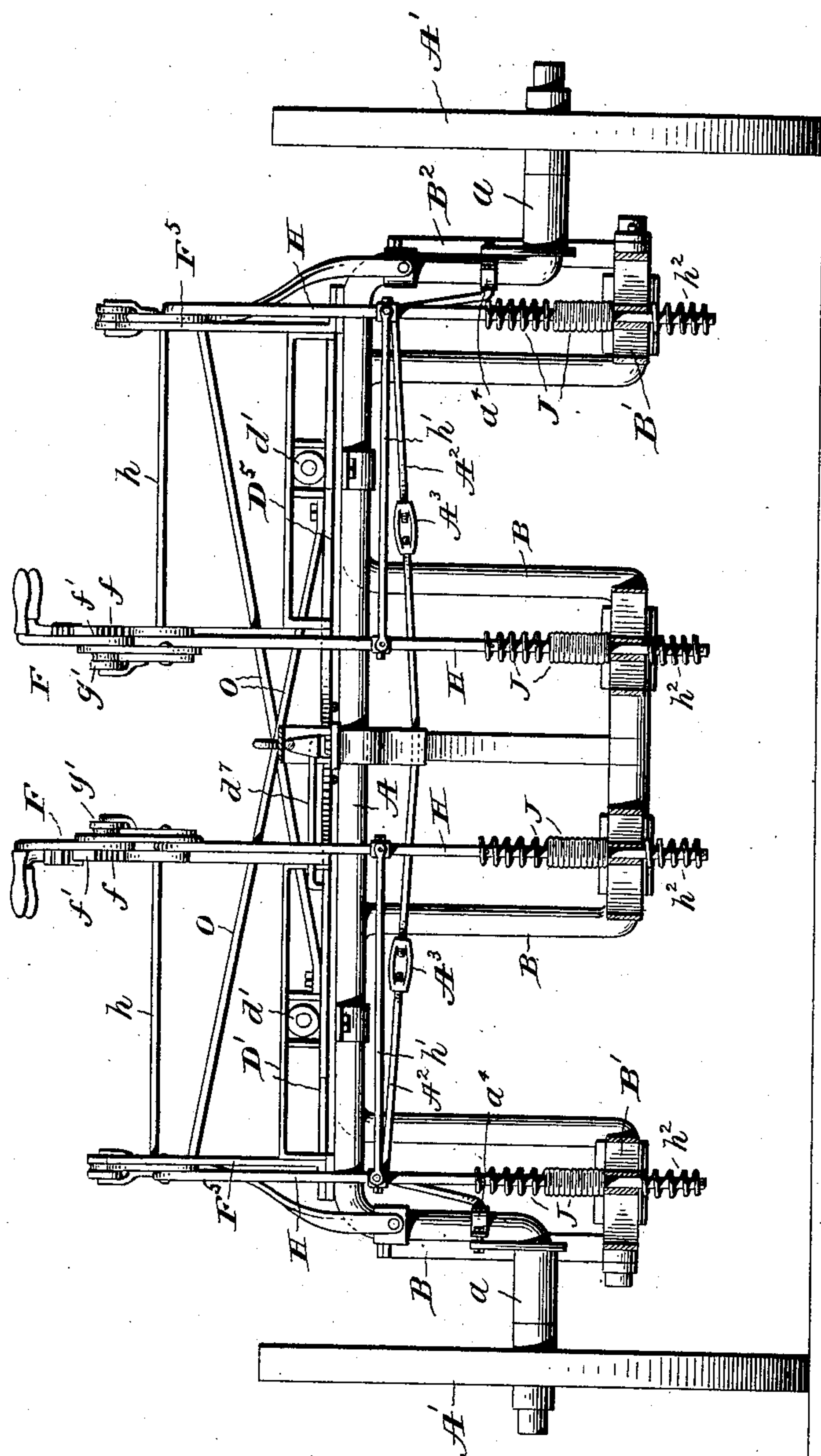
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4 SHEETS—SHEET 3.

Fig. 3.



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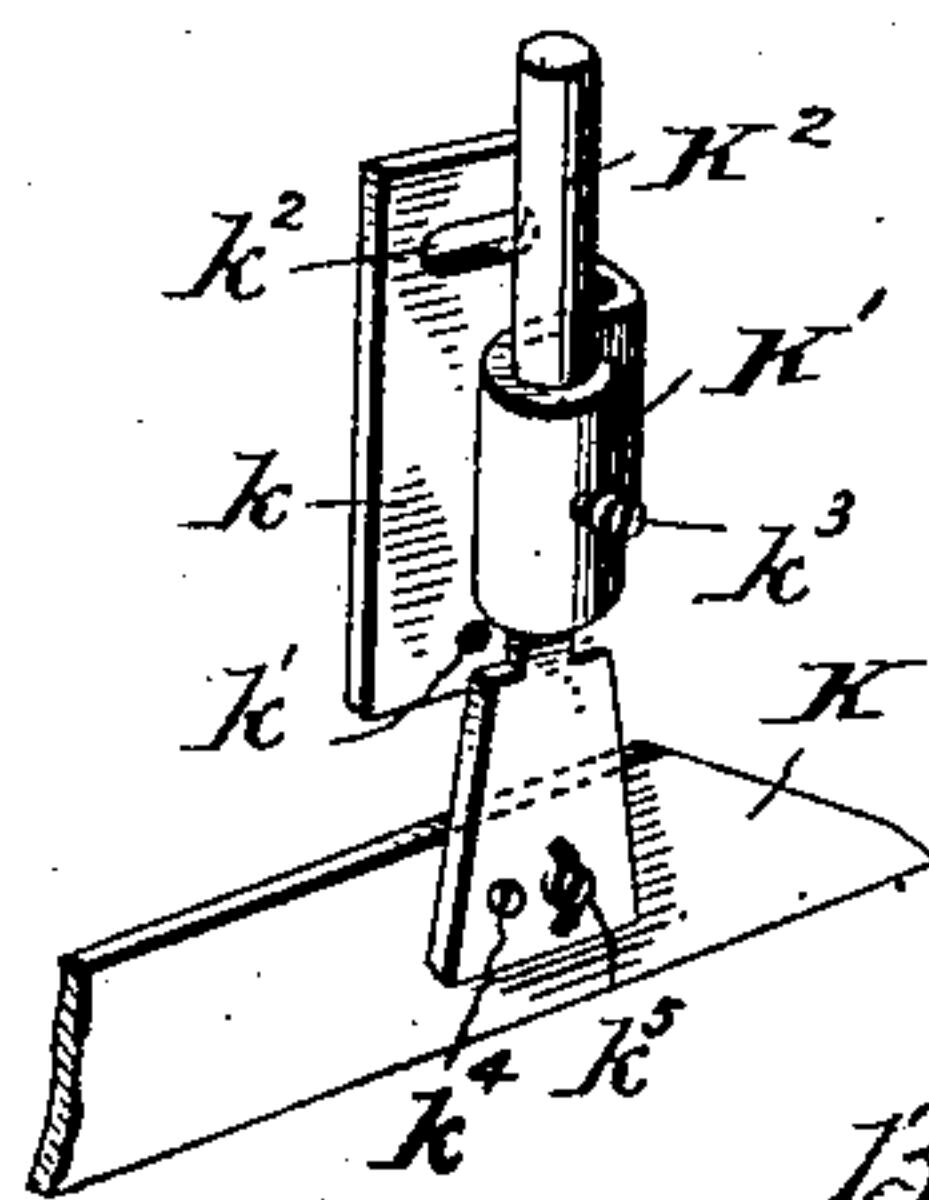
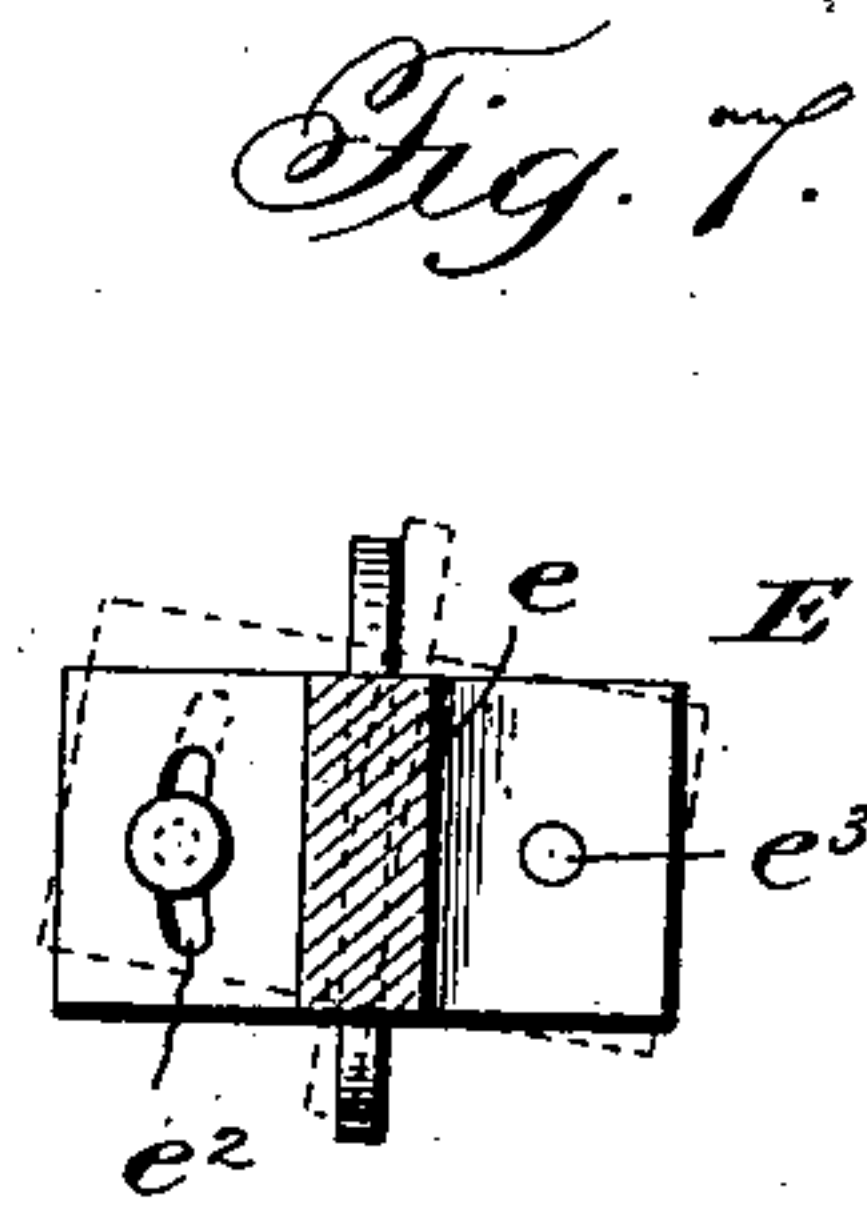
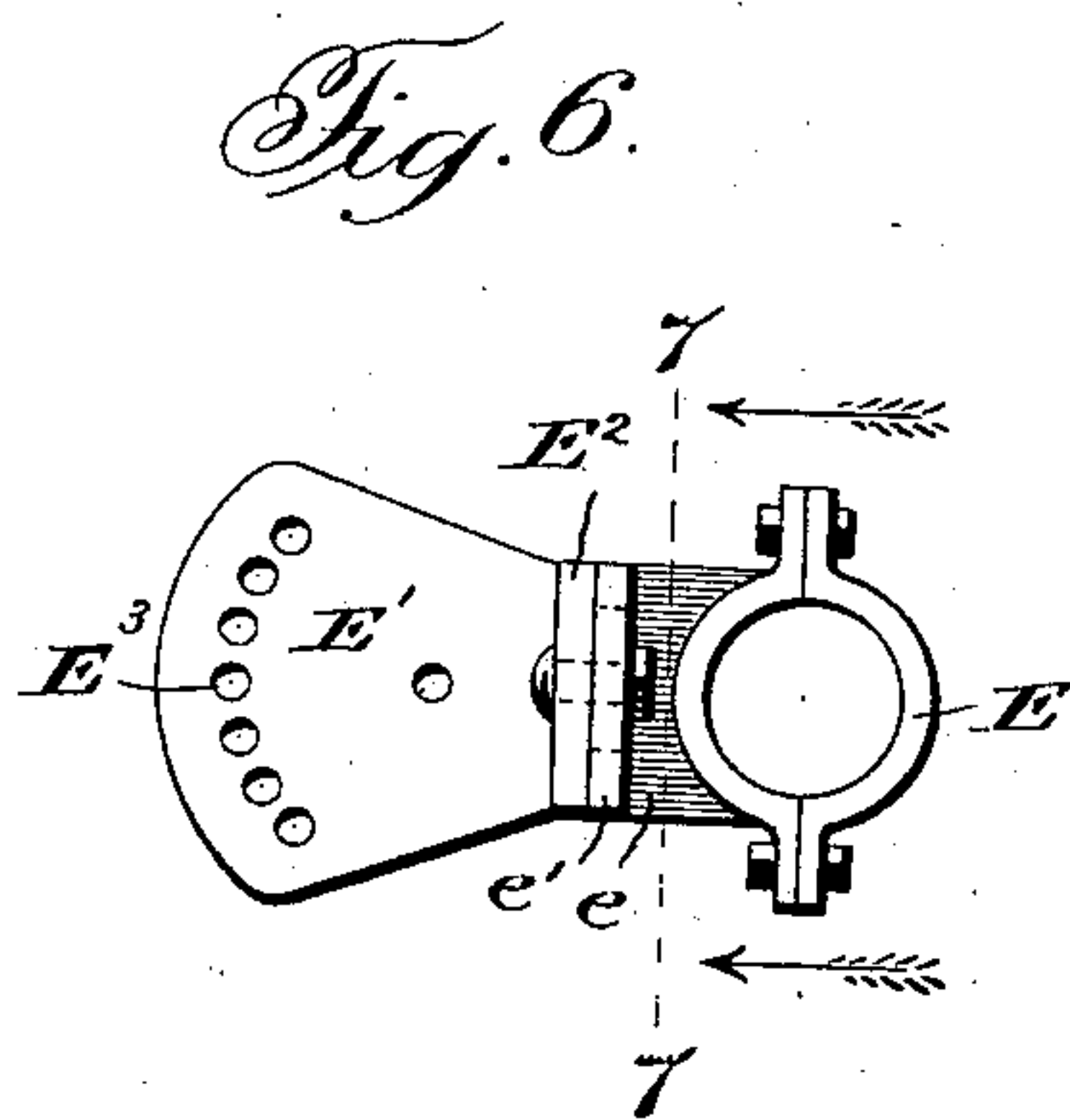
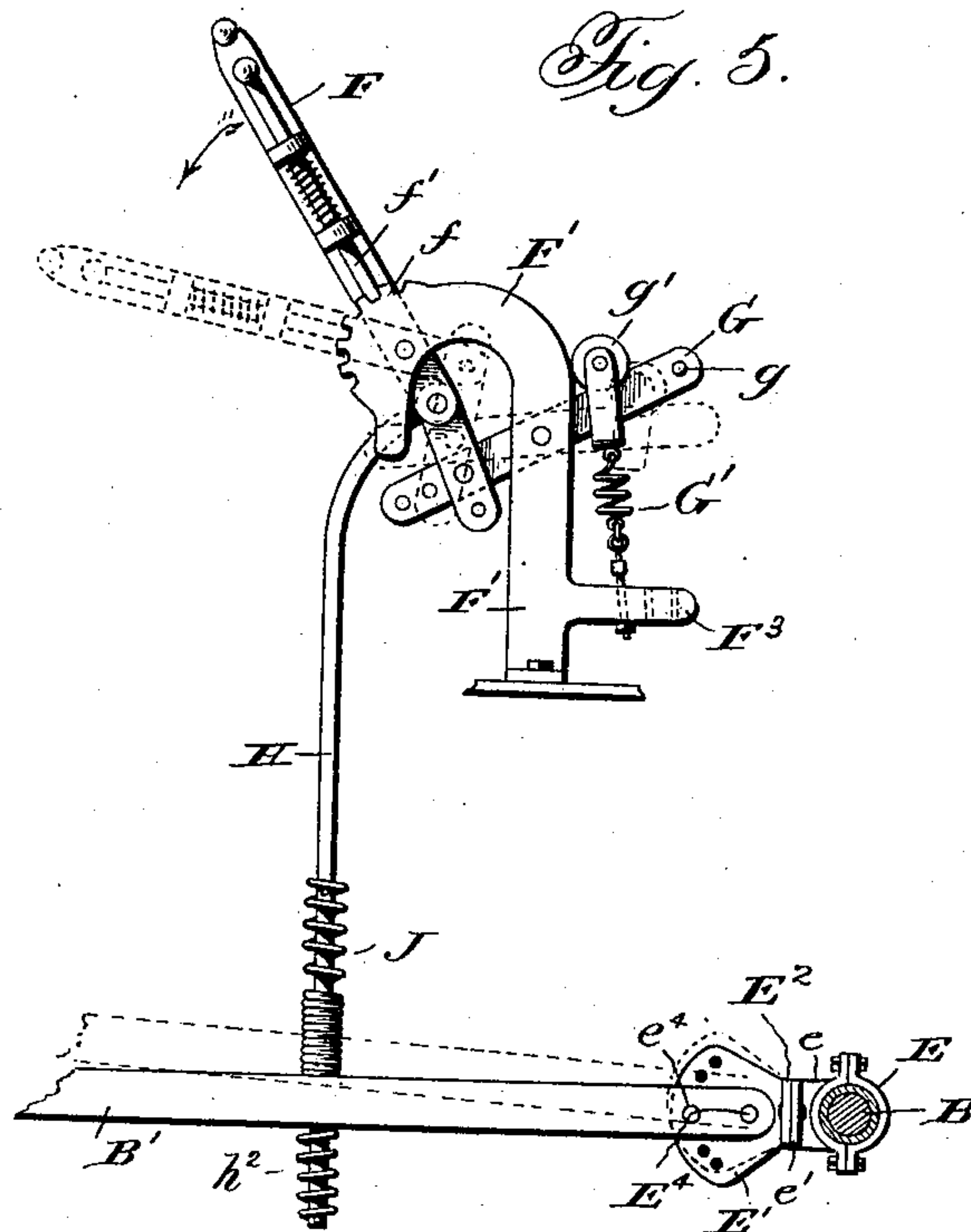
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NO MODEL.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

FRANCIS L. BLOCK, OF SIDNEY, ILLINOIS.

WHEEL-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 755,737, dated March 29, 1904.

Application filed May 9, 1903. Serial No. 156,424. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS L. BLOCK, a citizen of the United States, residing at Sidney, in the county of Champaign and State of Illinois, have invented certain new and useful Improvements in Wheel-Cultivators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in wheel-cultivators, and is embodied in the construction and arrangement of parts presently to be described, and defined in the claims.

The objects of the invention are the provision of improved means for adjusting the cultivator-gangs, improved means for bracing the cultivator-frame, improved means for applying a variable lifting action on the cultivator-frame, improved adjusting connection between the cultivator-frame and the attaching-bar, improved spring arrangement for permitting the downward movement of the cultivator-gang frames, a construction whereby a single tongue can be employed, a construction embodying an improved transverse adjustment for the gang-frames, and the improved construction and arrangement of the various other parts and features of the general construction of cultivator.

The invention is more particularly applicable to the type of wheel-cultivators wherein lifting-springs are employed in connection with the elevating and lowering lever.

In the accompanying drawings is shown a construction of wheel-cultivator embodying the improvements; but it is to be understood that the principle of the invention can be readily employed in connection with structures differing widely from that shown and so without departing from the nature and spirit of the invention.

In the drawings, Figure 1 is a plan view of a machine embodying the invention. Fig. 2 is a side elevation showing the rear wheel and a portion of the frame removed. Fig. 3 is a rear view. Fig. 4 is a detail view of the axle. Fig. 5 is a detail view of the lifting-lever and its associated parts. Fig. 6 is a detail side elevation of the connection between the beam and its bar. Fig. 7 is a similar view taken

through the line 7 7 of Fig. 6; and Fig. 8 is a detail perspective of the scraper connection.

A designates the axle, which is of the usual U type, having its ends fashioned to support the carrying-wheels A'. These are properly spaced apart by suitable removable sleeves α , interposed between the same and the upright portion of the axle, as shown in Fig. 1. The sleeves may be obviously removed and the wheels set in toward the frame, the sleeves α being thereafter placed on the outer ends of the axle and there retained by suitable pins or other means.

Heretofore in wheel-cultivators including three or more gangs it has been found that the U-shaped axle or support would in the course of time bend or warp downwardly. To avoid this, I have provided the axle with a truss-rod A², Fig. 4, and a central strut α^2 . This truss-rod A² is passed through suitable clips α^3 on the upper part of the axle and thence carried down to and secured to the upright parts of the axle by suitable clips α^4 , and the rod A² is divided on opposite sides of the strut α^2 , the severed ends being connected by turn-buckles A³, so that the tension of the truss may be varied at will. The said structure of axle preserved in its proper condition avoids largely the deflection of the wheels from true vertical position and the disarrangement of the gangs. This feature of the invention is regarded as important. Fixedly mounted on the shaft or axle A is a frame, comprising side bars C, cross-bars C', C², and C³, and a central longitudinal bar C⁴. The side bars C are fixedly secured at their rear ends to the upper portion of the axle and by braces c to the upright portions of the axle and are thereby held rigidly in place on the axle, while the central bar C⁴ is at its rear end clipped to the axle, by which construction the frame is rigidly secured to the axle free from independent movement. Pivotally supported on the outer end of the frame is a single tongue D, the same being located at one side, as shown in Fig. 1, and pivoted to the forward cross-bar by a pivot d , passing through a suitable bracket or clip fast to the frame. The rear end of this tongue carries a roller d' , working

between curved ways D' and the rear cross-bar of the frame, so that the tongue may be pivoted transversely, but is prevented from moving vertically independent of the frame.

5 Diametrically opposite the tongue is a short complementary bar D^2 , its forward end terminating at or near the edge of the frame and being pivoted to the frame in a manner similar to the tongue D , its rear end being

10 provided with a roller fitting in the guide D^5 , in all respects similar to that just described in relation to the end of the tongue D . The end of the tongue and the bar D^2 being susceptible of transverse movement or a lateral-

15 swinging movement are connected at their rear ends by a cross-bar D^3 , the ends of the bar D^3 being pivoted to the respective tongue D and bars D^2 , and this cross-bar D^3 has adjustably connected thereto the ends of an operating-lever D^4 , which lever is pivoted on a king-

20 bolt d^4 , projecting through an angle-bracket d^5 on the frame and into the end of the central bar C^4 . The end of the lever D^4 is provided with a series of perforations d^6 , in which

25 an end of the link d^7 is removably placed, the opposite end being placed in one of the series of apertures d^8 in the bar D^3 , as shown in Fig. 1. By the above construction the movement of the lever D^4 to the right or left shifts the

30 bars D and D^2 on their pivots either to the right or left.

B designates the forward supporting-bar, which is made conveniently in the form of a double U in the usual manner for straddling

35 the growing rows of corn. This bar B is supported by suitable clips b , pivoted to the rear ends of the tongue and the bar D^2 , so that upon the movement of the latter the supporting-bar will be likewise moved. The lower

40 portion of the supporting-bar B constitutes bearing surfaces or axles for the respective plow-gangs B' , and the outer end of the supporting-bar is connected with the upper portion of the axle A by the diagonally-arranged

45 pivoted braces B^2 .

The respective plow beams or gangs are connected with the forward supporting-bar B by peculiarly-constructed clips. (Shown more particularly in Figs. 5, 6, and 7.) This clip

50 comprises a central bearing E , extending around the lower portion of the supporting-bar and properly spaced by suitable sleeves or in any other convenient manner, and a member of the clip E is provided with a projection

55 e , having a T-head or transverse plate connection e' . This plate is provided with the curved longitudinal slot e^2 on one end and the central pivot e^3 at the opposite end.

E' designates the clevis extension, having a

60 plate E^2 at its forward end, fashioned and apertured to correspond with the plate e' on the clip. Suitable bolts are passed through the apertures in the respective plates and serve to retain the plates in their relative adjustments,

65 so that by turning the clevis E' its vertical po-

sition may be shifted to an angular position to suit various conditions of use. The clevis E' is also provided with a series of apertures E^3 , through which passes the removable pins e^4 , and the ends of the beams B' are extended

70 past or beyond the apertures E^3 and are coupled with the clevis by a pin E^4 , passing through the aperture in the clevis at or near its center. By this construction the ends of the plow-beams can be adjusted so as to vary

75 their normal positions relative to the ground-surface.

The plow-beams B' are vertically movable by virtue of their pivotal connection with the supporting-bar B , and this vertical movement is utilized for adjusting purposes, which is accomplished by hand-levers F , which hand-levers are secured conveniently to the curved

80 ends of upright extensions F' , projecting from the frame, and which extensions are provided

85 with sector-racks f , with which a suitable spring-actuated locking-dog f' engages for the purpose of retaining the lever in its various positions of adjustment. The inner end of the lever carries a link F^2 , which is adjustably

90 connected with a rocking lever G , mounted on the upright portion of the upright F' . This rocking lever G has a transverse pin g on its outer end and projects a suitable distance beyond the upright F' . On the forward end of

95 this rocking lever is mounted a roller g' , the same being carried by a U -clip, to the lower end of which is attached a spring G' , which is adjustably secured at its lower end to an offset

100 F^3 on the standard or upright F' . The roller g' is permitted an extended movement on the rocking lever, the extent of which is limited by the pin g and the upright F' , so that as the lever G is rocked the position of the spring-

105 contact or what I shall term a "lifting-spring" is relatively adjusted, so that when the roller is in its outermost position the leverage will be greater, and consequently the plow-beams more easily elevated. The plow-beams are

110 connected with their respective rocking levers by suitable links H , the latter being adjustably connected to the inner ends of the rocking levers, as shown in Fig. 5, so that the leverage may be varied. This adjustment

115 may be accomplished by a series of holes or in any other convenient manner. The standards or uprights F^5 at the ends of the machine are not provided with the curved extensions, but are provided with rocking levers, and these

120 levers on opposite sides of the machine are connected conveniently by the cross-rods h , which constitute the pivots for the rocking levers. The links H on opposite sides are also connected intermediate their ends by cross

125 rods or braces h' to give rigidity thereto and uniformity of vertical adjustment.

The construction of raising and lowering mechanism above described is such that the power of the raising and lowering springs G' is exerted at an increased ratio upon the tilt-

130

ing of the rocking lever by virtue of the movable connection between the springs and the lever, so that as the operator operates the hand-levers the springs will increase in their efficiency as elevating-springs and assist the operator to raise the plow-beams.

I have found it expedient in the construction to connect the elevating-links H with the plow-beams by flexible connections, so that the plow-beams will have an independent movement in case they meet with obstructions. With this in view the ends of the links are passed through suitable bearings in the beams and rest on buffer-springs k^2 , adjustably secured on the links H. Mounted on the upper face of the beams and sleeved on the lower portion of the links H are springs J, which I shall term for convenience "duplex" springs. They are constructed of a single piece of metal conveniently coiled, having their lowermost coils or bends positioned or normally resting against each other, while their upper coils are extended or expanded, so that the upper portion of the spring will be more sensitive than the lower portion. The upper ends of the springs J are connected to the links H and the lower ends are connected to the beams, so that should the beams meet with obstructions tending to create an increased penetration into the soil the movement will be immediately resisted by the upper portion of the springs J, while should the downward movement be unusually great the less elastic lower portions of the springs J would be brought into action, more effectually preventing a further penetration of the plows or shovels. This duplex spring is regarded as important as an auxiliary guard against damage to the machine by further penetration or contact with unusual obstructions.

The scrapers K are connected to the knees of the beams by a suitable adjustable construction, (shown in Fig. 8,) consisting conveniently of a plate k , having an aperture k' at its lower end and the longitudinal aperture k^2 at its upper end. These plates are fitted against the knees of the beam and are pivotally adjustable by being connected by suitable bolts and nuts, the same passing, respectively, through the apertures in the plate k . This plate k has a casing or projection K' , through which the shank K^2 of the scraper passes and is adjustably held by a set-bolt k^3 . The scraper K is also adjustable on the shank k^2 by having a suitable bolt k^4 passing through the flattened end of the shank, which latter has a curved slot therein opposite the bolt-hole, through which passes a set-bolt k^5 , the angularity of the scraper being variable. A similar angular adjustment of the plow or shovel L is provided, as shown in Fig. 2, which consists of the shank l , having an aperture l' therein and a curved elongated aper-

ture l^2 above the latter aperture, suitable bolts being passed through the apertures, so that the shovel, with its shank, can be adjusted to the proper angle.

M M designate the draft-rigging, which is made conveniently to accommodate a suitable draft-equalizer, so that a single horse can be placed on the left of the single tongue and two horses on the right. Any convenient form of draft-rigging or equalizer can be employed.

To add rigidity to the frame and to the outer uprights convenient diagonal brace-rods O are employed, the same extending not only diagonally across the frame, but downwardly from at or near the upper ends of the uprights. Other additions can be made to the construction shown without departing from the invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a wheel-cultivator, the combination with a frame, of a guideway upon the frame, a tongue extending out from the frame, and pivoted intermediate its ends thereto, a roller at the rear end of the tongue slidable within the guideway, and means for adjusting the tongue.

2. In a wheel-cultivator, the combination with a frame, of a rearwardly-curved guideway thereon, a single tongue extending out from the frame at one side of the center thereof, a roller at the rear end of the tongue engaging the guideway, a draft-rigging arranged at one side of the tongue, and means for adjusting the tongue.

3. In a wheel-cultivator, the combination with an axle and a frame carried thereby, of two longitudinally-extending bars pivoted to the frame, rollers upon the bars arranged to travel upon rearwardly-curved bearings upon the frame, downwardly-extending supporting-bars located below the frame and secured to said pivoted bars, and means for adjusting the pivoted bars transversely of the frame.

4. In a wheel-cultivator the combination with an axle and a frame carried thereby, of two longitudinally-extended bars pivoted to the frame, rollers at the ends of the bars operatively associated with rearwardly-curved bearings upon the frame, downwardly-extended supporting-bars located below the frame and secured to said pivoted bars, a pivotal connection between the pivoted bars, and means for adjusting the pivoted bars transversely of the frame.

5. In a wheel-cultivator the combination with an arched axle and a frame carried thereby, of pivoted bars mounted on the frame, guides on the frame for the rear ends of the pivoted bars, rollers upon the pivoted bars arranged to engage the guides for forming a connection between the rear ends of the pivoted bars, means for adjusting the pivoted

bars transversely of the machine, and an arched supporting-bar connected to the pivoted bars.

6. In a wheel-cultivator, the combination with a frame, of a plow-beam, and means for elevating and lowering the plow-beam comprising a rocking lever pivoted to the frame, a variable-acting spring connected to one end of the rocking lever and movable toward and from the fulcrum of the lever, and a lifting-spring at the opposite end of the rocking lever.

7. In a wheel-cultivator, the combination with a frame, of a plow-beam, and means for elevating and lowering the plow-beam comprising a lever pivoted to the frame, a variable-acting adjustable spring movable toward and from the fulcrum of the lever, and a lifting-spring at the opposite end of the lever.

8. In a wheel-cultivator, the combination with a frame, of an upright upon the frame, a plow-beam, and means for elevating and lowering the same comprising a lever pivoted to the upright, a rocking lever pivoted to the upright and connected with said pivoted lever, a connection between the rocking lever and the plow-beam, and lifting-springs connected with the opposite ends of the rocking lever.

9. In a cultivator the combination with a frame, of uprights on the frame, rocking levers pivoted on the uprights, a connection between the rocking levers and the plow-beams, lifting-springs connected with the opposite ends of the rocking levers, and a hand-lever for actuating the rocking levers.

10. The combination with a frame and plow-beam, of an upright upon the frame having an outwardly-extending portion, links extending from the plow-beams, rocking levers pivoted intermediate their ends to the upright, to which the links are connected, lifting-springs for one end of the rocking levers connected to the outwardly-extending portion of the upright, movable connections between the rocking levers and the lifting-springs, where-

by the said connections approach and recede from the fulcrum of the rocking levers during the movement thereof, supplemental lifting-springs at the opposite ends of the rocking levers, and a hand-lever for actuating the rocking levers.

11. The combination with a scraper, of a shank thereon having an outwardly-bent portion curved back upon itself to form a recess for the shank, a plate, adjustable connection between the curved portion of the plate and the shank, and an adjustable connection between the plate and the plow-beam.

12. In a cultivator the combination with a plow-beam and a double-U-shaped supporting-bar, of clips on the lower portions of the supporting-bar, clevises, means for angularly adjusting the clevises on the clips, and a connection between the clip and the plow-beam substantially as and for the purpose specified.

13. In a cultivator the combination with a plow-beam and a double-U-shaped supporting-bar, of clips on the lower portions of the supporting-bar, a clevis, means for angularly adjusting the clevis on the clip, and an adjustable connection between the clip and the plow-beam.

14. In a cultivator the combination with a beam of a cultivating implement adjustably secured thereon having a plate having an outwardly-bent portion curved back upon itself to form a recess for affording a shank, a pivotal connection between the plate and the shank, said connection being longitudinally adjustable, and an elongated slot in the plate and a bolt passing through said slot and beam, substantially as described.

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

FRANCIS L. BLOCK.

Witnesses:

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F. R. GOODE.