

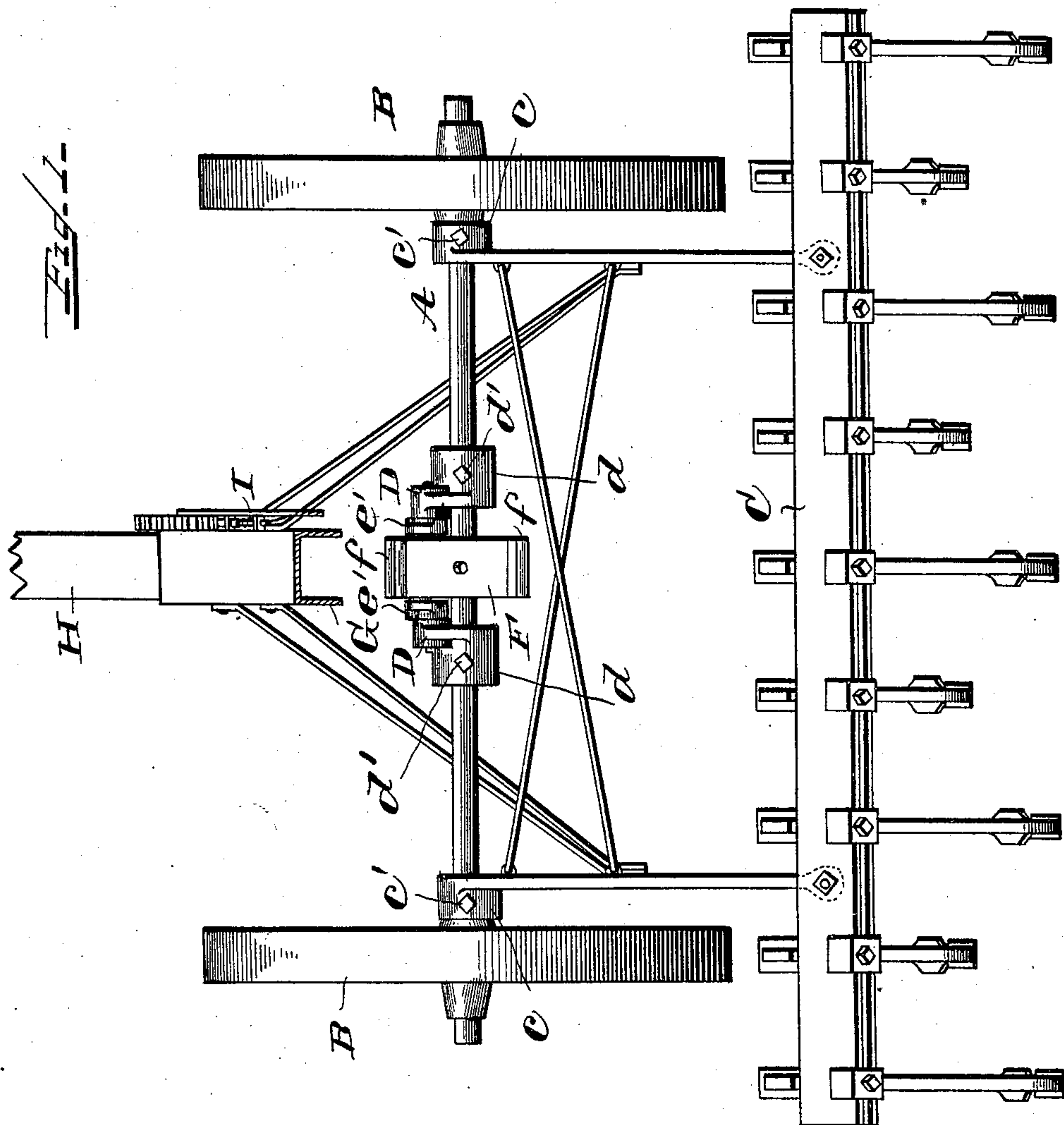
(No Model.)

4 Sheets—Sheet 1.

G. L. ROBY.
CULTIVATOR.

No. 587,066.

Patented July 27, 1897.



Witnesses

G. A. Pauberschmidt.
J. D. Knysberg

Inventor

George L. Roby
By Whitaker & West attys.

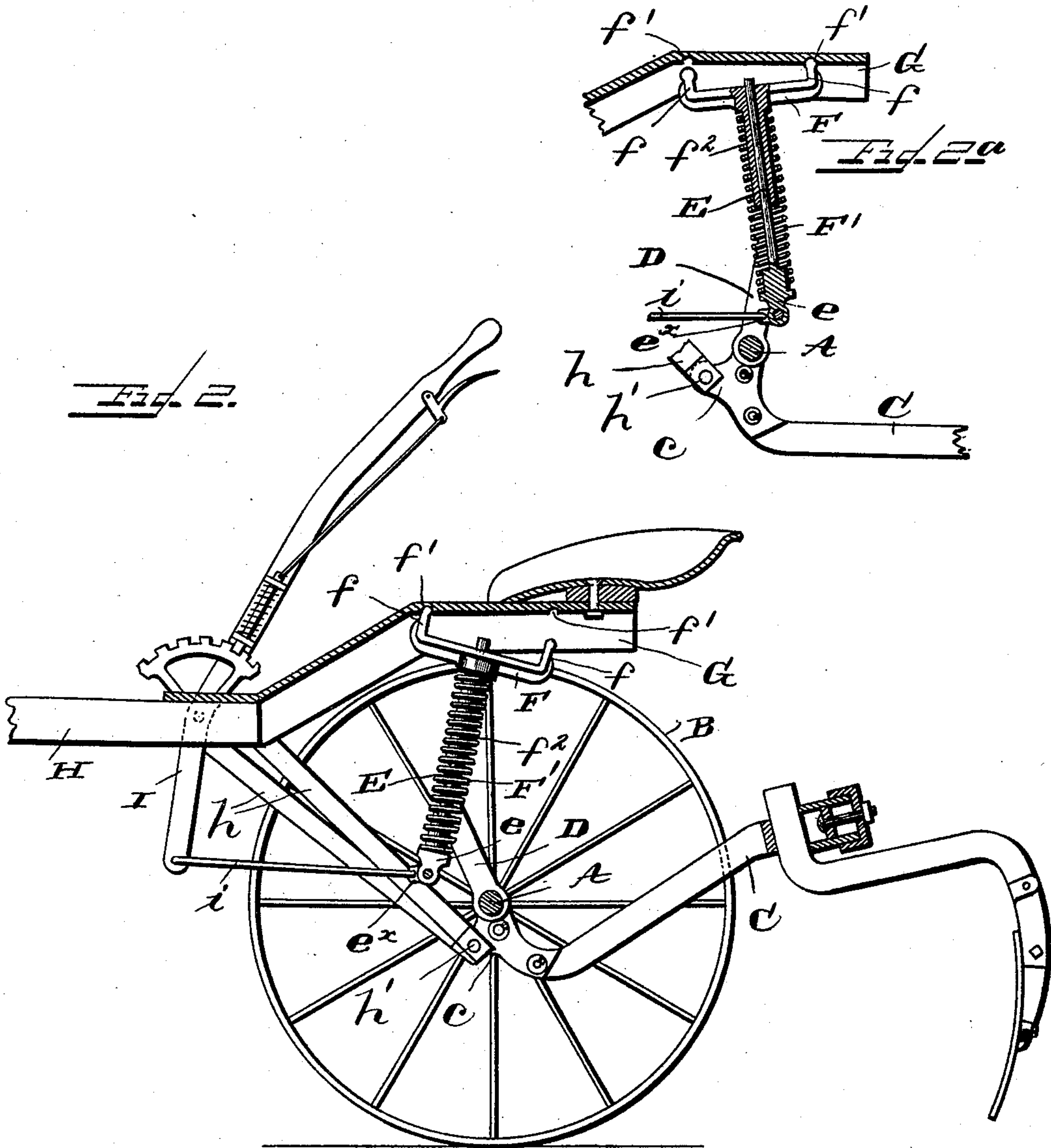
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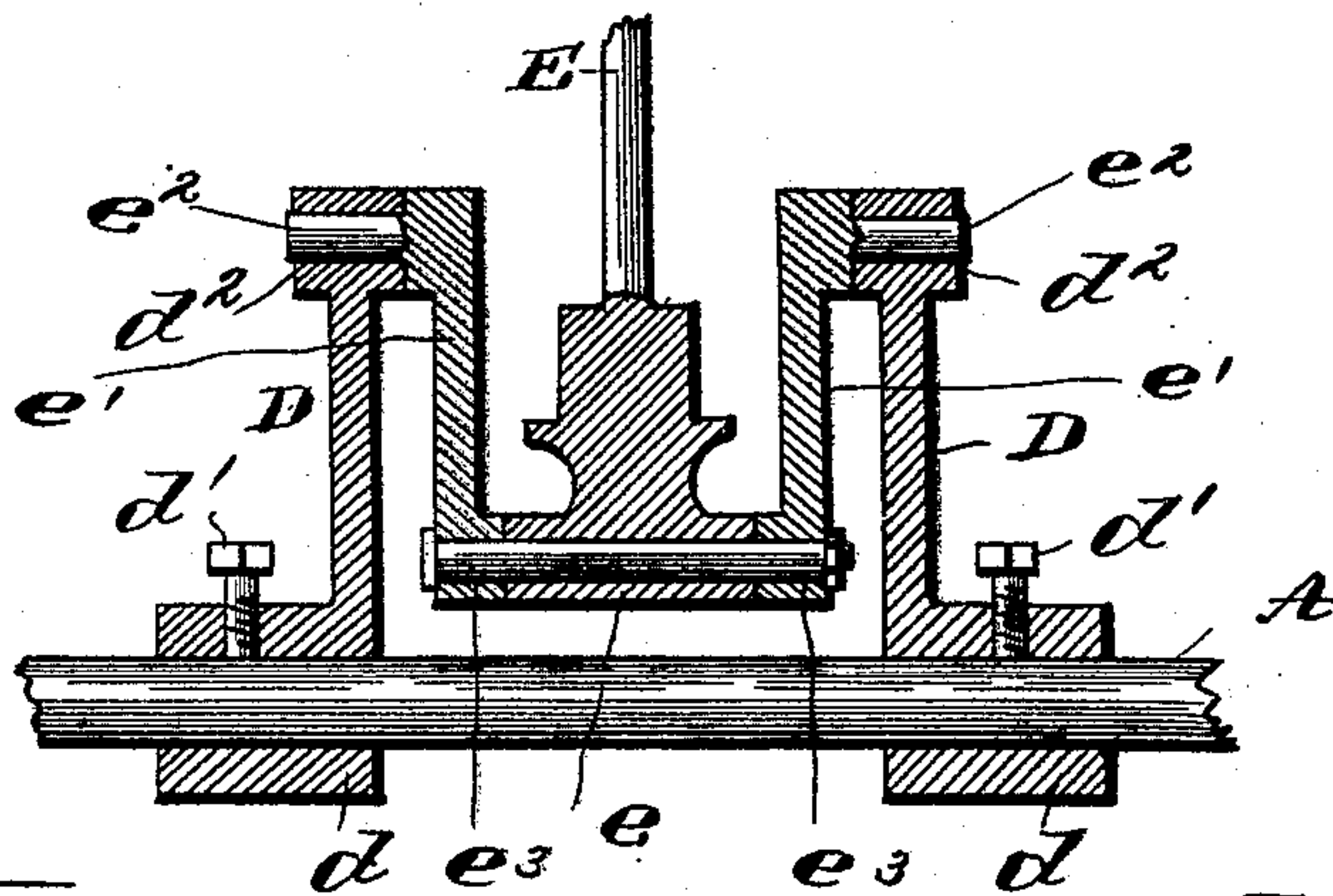
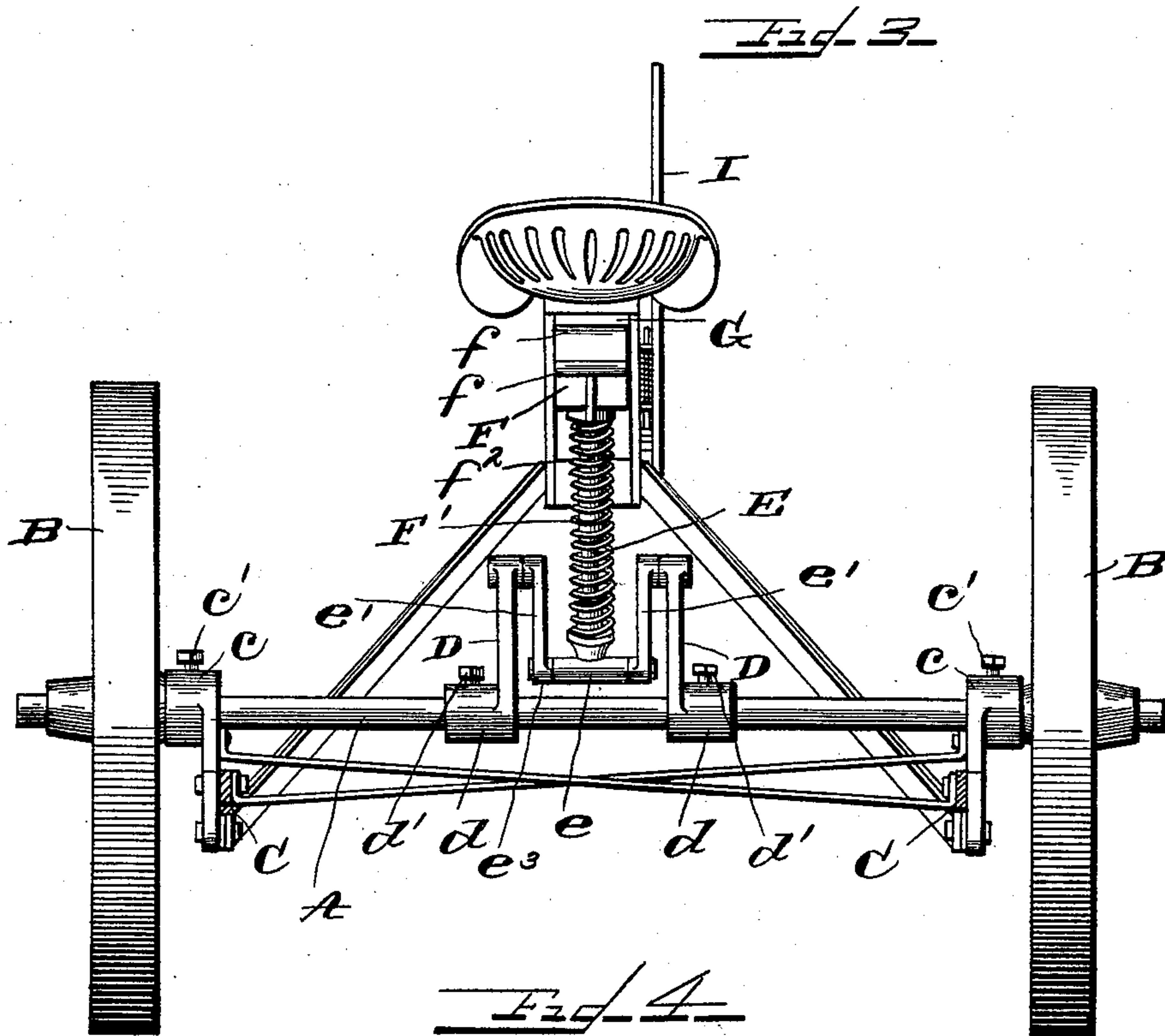
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Fig. 5.

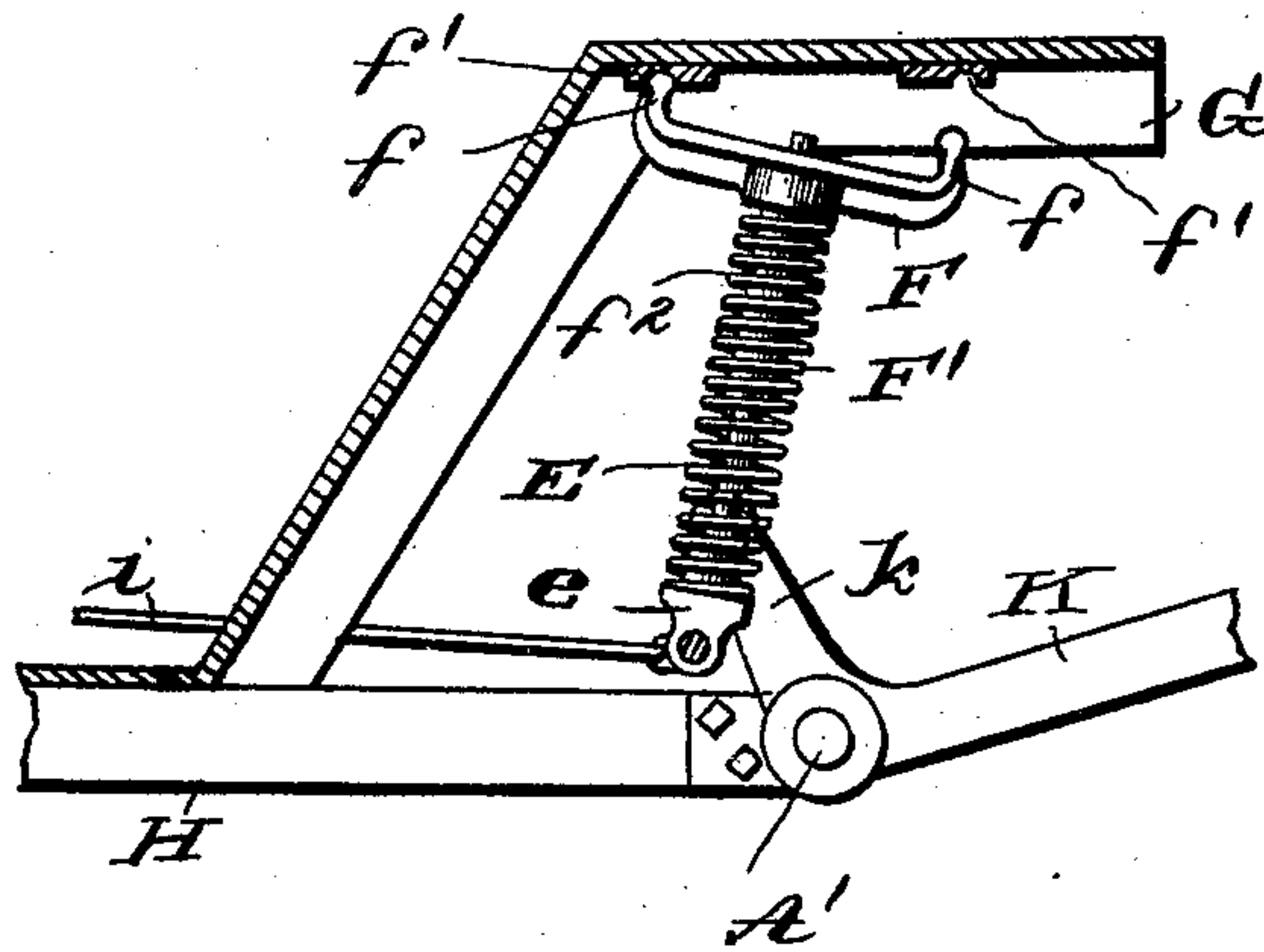


Fig. 6.

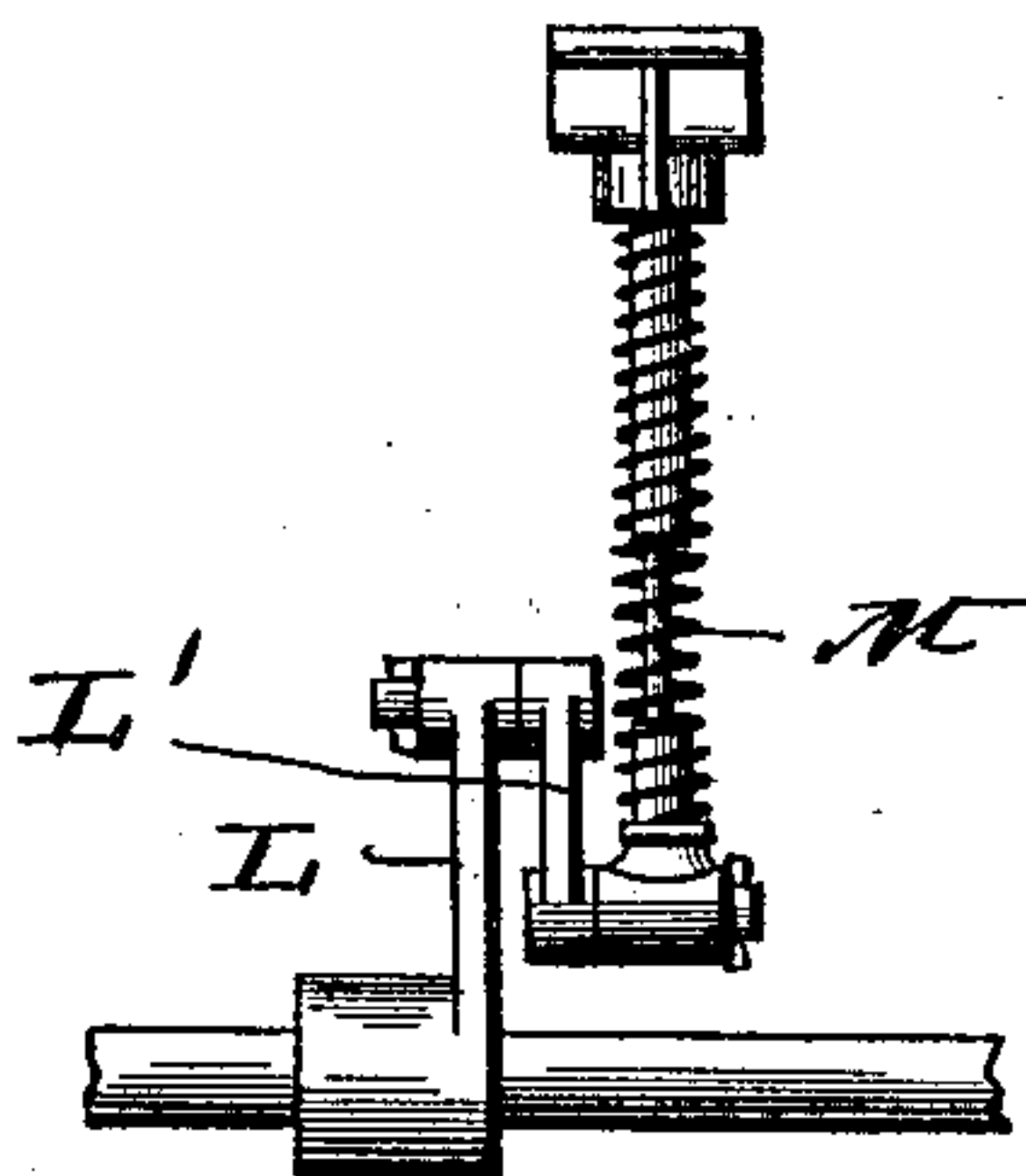
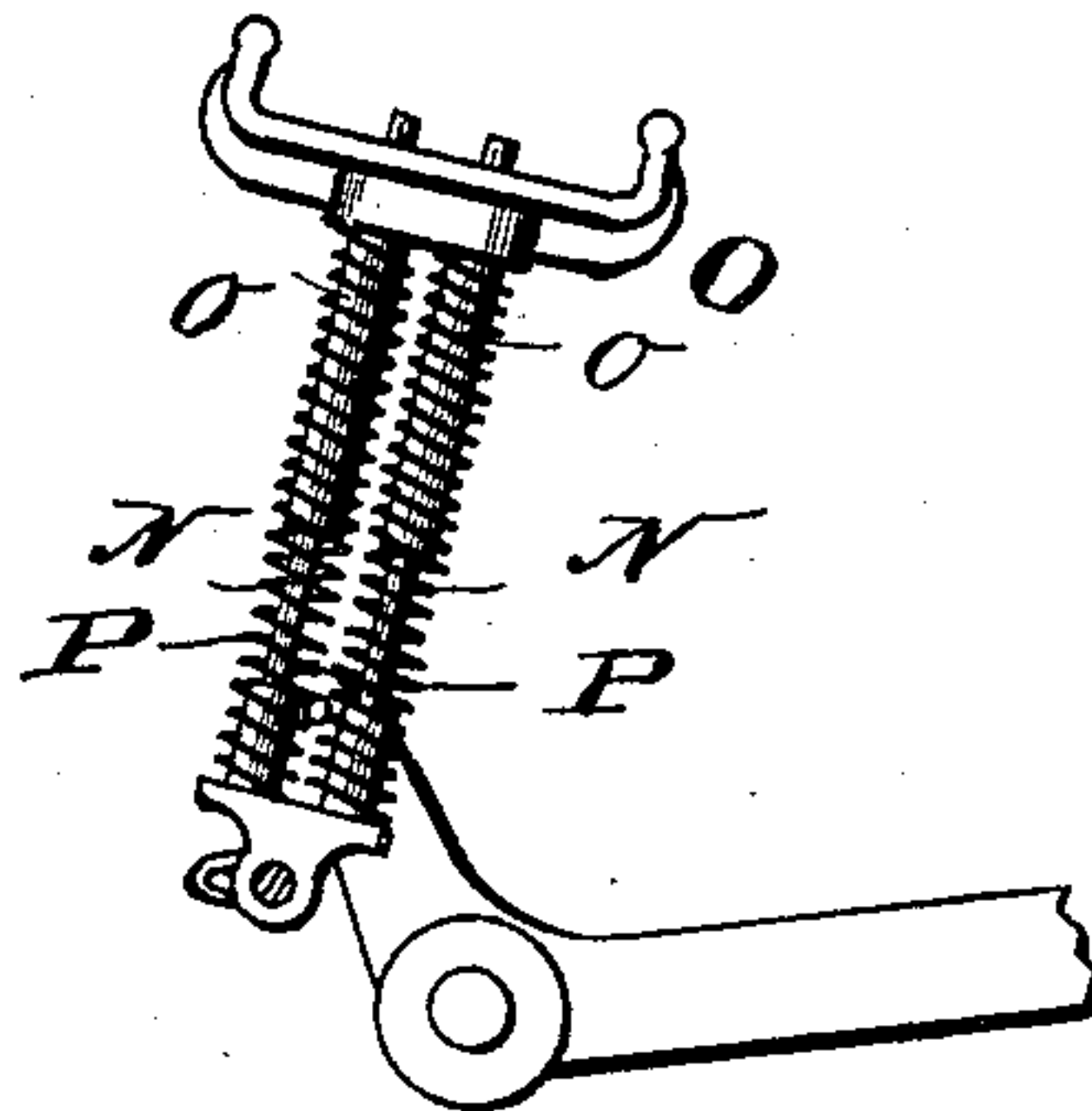


Fig. 7.



WITNESSES.

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INVENTOR.

*George L. Roby
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UNITED STATES PATENT OFFICE.

GEORGE L. ROBY, OF ALBION, MICHIGAN, ASSIGNOR TO THE GALE MANUFACTURING COMPANY, OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 587,066, dated July 27, 1897.

Application filed March 8, 1897. Serial No. 626,484. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. ROBY, a citizen of the United States, residing at Albion, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Cultivators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in cultivators; and it consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, said invention being fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 represents a top plan view of a cultivator embodying my invention. Fig. 2 represents a vertical longitudinal section of the same, showing the cultivator-shovels in raised position. Fig. 2^a is a detail view of a portion of the device as shown in Fig. 2, the cultivator-shovels being in their lowered or working position. Fig. 3 is a rear view of the cultivator. Fig. 4 is a detail sectional view of a portion of the mechanism. Fig. 5 is a detail view showing a slightly-modified construction. Fig. 6 is a detail of another slight modification of my invention. Fig. 7 is a side view of the device shown in Fig. 6, two springs being employed, however, instead of one.

The object of my invention is to provide a simple and efficient construction which can be adjusted so as to exert a pressure upon the cultivator plows or shovels when in working position and which can be so adjusted as to raise the said plows or shovels and hold them in elevated position when the machine is moved from place to place or is not in use.

In the drawings, A represents the axle, and B B the supporting-wheels. The frame C of the cultivator may be formed in any desired way and is rigidly connected with the axle, in this instance by means of collars c c, secured to or forming a part of the frame encircling the axle A and provided with set-screws c' c'. The said frame is provided with

shovels or plows of any desired form secured to the frame in any desired or usual manner.

The axle is provided centrally with a pair of vertically-disposed crank-arms D D, which are adjustably secured thereto. In this instance the said crank-arms are each provided with a collar d, surrounding the axle and secured thereto by means of a set-screw d'. The upper end of each crank-arm D is also provided with an aperture d².

E represents a vertically-disposed guide-rod having at its lower end a horizontal sleeve e, which is connected with the arms D D by means of links e' e'. Each of these links is provided at its upper end with a pin or stud e², preferably formed integrally therewith, which engages the aperture d² of one of the arms D, and at its lower end the link is provided with an aperture e³. A bolt is passed through the apertures e³ of said links and through the sleeve e to secure these parts together, and this construction forms a stirrup connecting the rod E and arms D D.

At the upper end of the rod E is a fulcrum-plate F, which has at each end an upturned flange or projection f, adapted to engage a recessed seat f', formed in or secured to the under side of the seat-bar G of the machine, which extends rearwardly from and is connected with the tongue H. The seats f' f' are at the same distance apart as the projections or flanges f f' of the plate F. The plate F is provided centrally with a sleeve f², which has a sliding engagement with the rod E, and a strong spiral spring F' surrounds the said sleeve and rod between the plate F and the horizontal sleeve e. The sleeve e is also provided with one or more ears e^x on its front side, to which is attached a link i, extending rearwardly from a hand-lever I, which is pivoted to the tongue H or other part of the frame and provided with the usual pawl-and-ratchet retaining mechanism.

When the parts are in the position shown in Fig. 2, the stirrup being forward of the arms D D and the forward flange f of the fulcrum-plate resting in its seat, the pressure of the spring F' will be exerted upon the arms D D, so as to elevate the cultivator frame and shovels and hold them in raised

position. When it is desired to lower the shovels into working position, the operator moves the hand-lever I, so as to throw the stirrup rearwardly of the arms D D. This will cause the said arms to move rearwardly with the stirrups for a certain distance, and as the lower end of the rod E moves rearwardly the rear end of the fulcrum-plate will be raised until the rear flange *f* enters its seat *f'*, when the forward flange will leave its seat with the further movement of the stirrup, thus bringing the parts into the position shown in Fig. 2^a and causing the spring F' to exert a rearward pressure on the arms D D tending to hold the shovels in the ground. To raise the shovels, the hand-lever is moved so as to draw the stirrup forward, when the parts will be brought into the position shown in Fig. 2.

It is to be noted that by moving the stirrup into alinement with the axle and the center of the fulcrum-plate the parts will be brought to a state of rest, the spring at such time exerting its power only to maintain existing conditions. It will also be seen that as the stirrup is swung either forward or backward the resulting effect of the movement of the fulcrum-plate is to compress the spring and cause it to exert more force than when in the middle position. This partly results from the fulcrum-plate and partly because the lower end of rod E is lowest when the stirrup is in the middle position and that the act of moving the stirrup causes the lower part of the same to swing upwardly.

In connecting the draft mechanism of the cultivator (comprising the tongue and the driver's seat supported thereby) to the cultivator-frame I prefer to employ the bars *h h*, rigidly secured to the tongue and pivotally connected to a portion of the cultivator-frame extending forward of the axle, so that the weight of the driver and of the draft mechanism will tend to assist the spring F in elevating the cultivator frame and shovels. In Figs. 1 to 4, inclusive, the arms of the cultivator-frame, which are connected with the axle A, are provided with forwardly-extending ears *c*, which extend forward of the axle A when the cultivator-frame is in operative position, and to these ears *c c* the bars *h h* of the draft mechanism are pivotally connected, as shown at *h' h'*. It will thus be seen that when the hand-lever is moved so as to raise the cultivator-frame the weight of the tongue, seat, and of the driver will bear down upon the ears *c c* and thus tend to counterbalance the weight of the cultivator-frame, (see Fig. 2^a,) thereby assisting the spring F to raise the said frame and the shovels.

I do not desire to be limited to my exact constructions, as the details may be changed without departing from the principle of my invention. For instance, by slight changes a single crank-arm D might be employed and the stirrup cut in two, or the cultivator-frame

might be pivoted upon the axle and the axle rigidly connected with the tongue and stationary parts, but in each of these cases the principle of operation would be the same.

In Fig. 5 I have shown a slight modification of my invention, in which the frame-bars K K of the cultivator-frame are pivoted directly on the axle A' and provided each with an arm *k*, secured to the bar or formed integrally therewith, to which the stirrup is attached, the other parts being the same as in the form previously described.

In some cases I may employ only a single arm secured to the axle, as shown at L, Fig. 6, and connect it by a stirrup or link L' with the guide-rod M, which the spring surrounds, the other parts being the same as heretofore described. I might also employ two springs instead of one, and in Fig. 7 I have illustrated such a construction. Two guide-rods N N are provided, secured at their lower ends to a casting, which is connected by either the single or double stirrup with the operating arm or arms of the cultivator-frame. The fulcrum-plate O is provided with two sleeves *o o*, engaging said rods, and springs P P surround said rods and levers. The operation of the devices shown in Figs. 1, 6, and 7 is the same as that described with reference to the preceding figures.

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

1. In a wheel-cultivator the combination with a tooth-frame having a movement about a horizontal axis, of a crank connected with said frame, a stirrup pivoted to said crank, a spring entering between said stirrup and a stationary part of the cultivator, and means for swinging the stirrup to either side of the plane of the said crank, substantially as described.

2. In a wheel-cultivator the combination with a tooth-frame having a movement about a horizontal axis, of two crank-arms connected with said frame, a stirrup pivoted to said crank-arms, a compression-spring extending between the said stirrup and a fulcrum-plate bearing against a stationary part of the cultivator, and means for swinging said stirrup and fulcrum-plate, substantially as described.

3. In a wheel-cultivator, the combination with a tooth-frame having a movement about a horizontal axis, of a compression-spring extending between the said frame and a fulcrum-plate having two bearings upon a stationary part of the cultivator, and means for swinging the frame end of the spring to either side of the frame axis, whereby the fulcrum-plate is swung from first one to the other of its bearings, substantially as described.

4. In a wheel-cultivator the combination with the tooth-frame and a draft-frame having a pivoted connection, of crank-arms rigidly connected with the tooth-frame, a stirrup pivoted to said crank-arms, a compression-spring extending from said stirrup to the

draft-frame and means for swinging the said stirrup, substantially as described.

5. In a wheel-cultivator, the combination with a draft-frame pivoted to the axle, of a tooth-frame rigidly connected with the axle, a pair of crank-arms on said axle, a stirrup pivoted to said crank-arms, a compression-spring extending between the stirrup and the draft-frame, and means for swinging the stirrup, substantially as described.

6. In a wheel-cultivator the combination with a draft-frame pivoted to the axle, of a tooth-frame rigidly connected to the axle, crank-arms extending upwardly from the axle, a stirrup pivoted to the crank-arms, a compression-spring extending from the stirrup to a portion of the draft-frame above the axle, and means for swinging the stirrup forward and back of the axis of movement, substantially as described.

7. The combination with a draft-frame and a cultivator-frame having a pivotal connection between them, of the spring interposed between the two frames consisting of the rod having a bearing for one end of a spring, a spring and the fulcrum-plate sliding on the

said rod and engaging the opposite end of the spring, substantially as described.

8. The combination with the cultivator-frame, having a vertical movement on a horizontal axis, of the draft-frame pivoted to said cultivator-frame forward of its axis, whereby the weight of the draft-frame tends to counterbalance the cultivator-frame, and means for elevating and depressing said cultivator-frame, substantially as described.

9. The combination with the cultivator-frame having a vertical movement on a horizontal axis, of the draft-frame pivoted to said cultivator-frame forward of its axis, a crank connected with said frame, a stirrup pivoted to said crank, a spring interposed between said stirrup and a stationary part of the cultivator and means for swinging the stirrup to either side of the plane of the crank, substantially as described.

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

GEORGE L. ROBY.

Witnesses:

G. W. BORTLES,
EARLE KNIGHT.