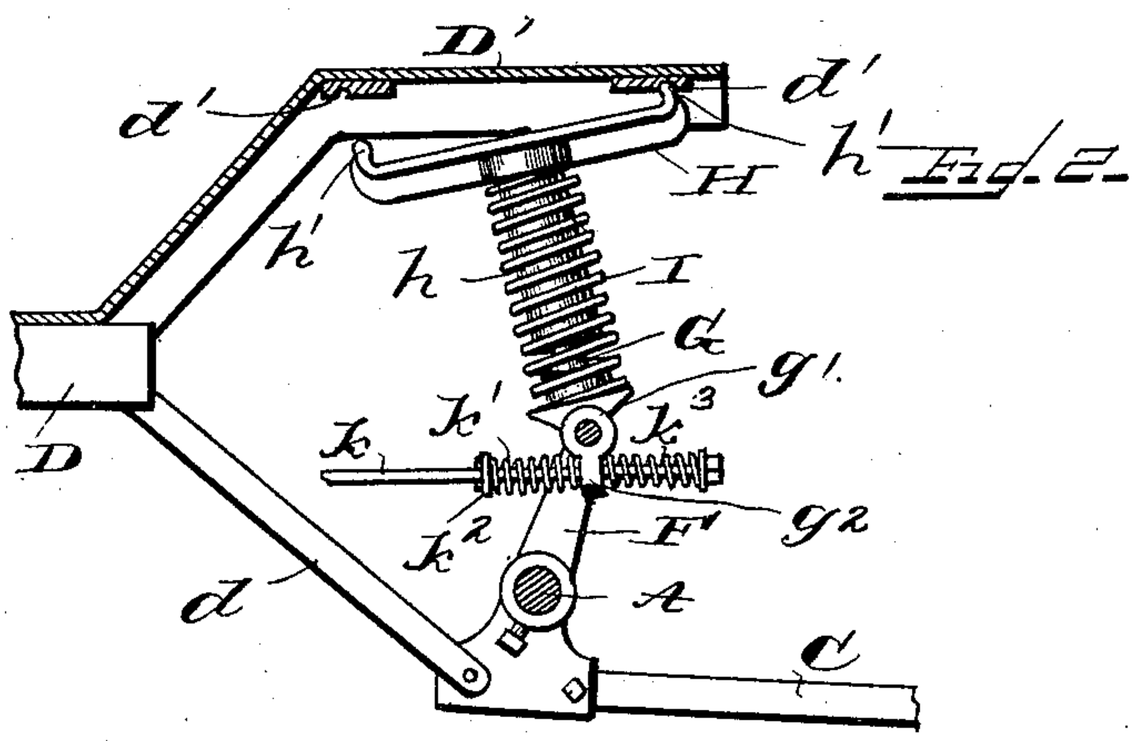
(No Model.) 4 Sheets—Sheet 1.

G. L. ROBY

CULTIVATOR.

No. 587,067. Patented July 27, 1897.

Fig. 2.



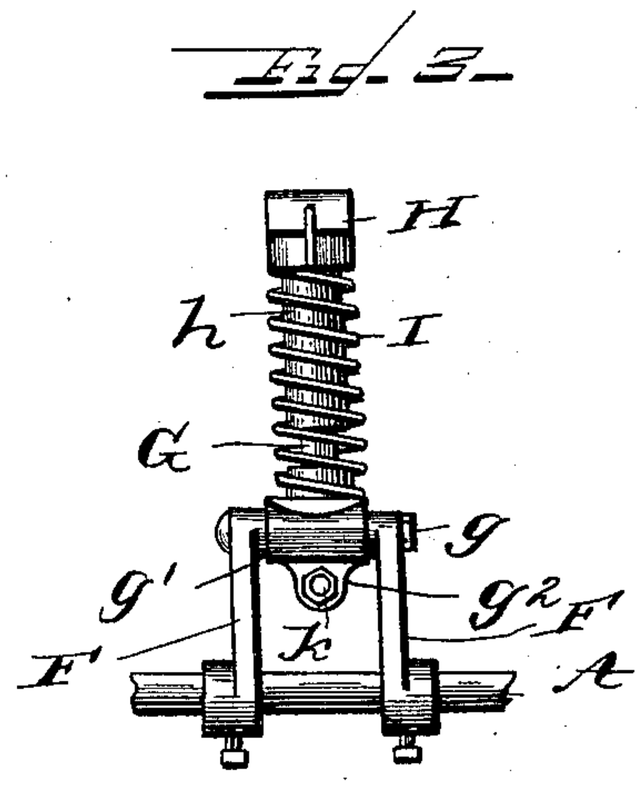
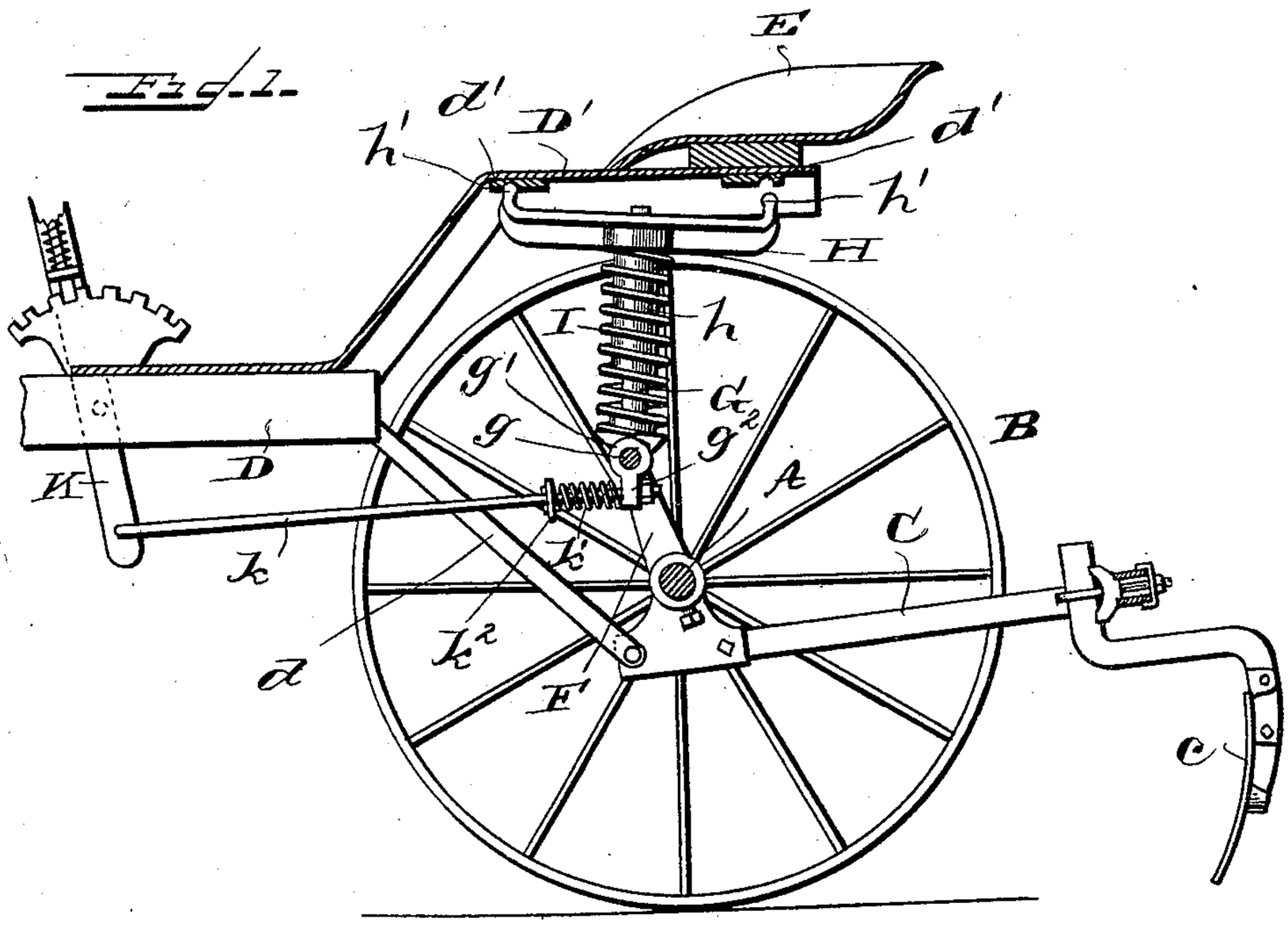


Fig. 1.



Witnesses—

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Fig. 4.

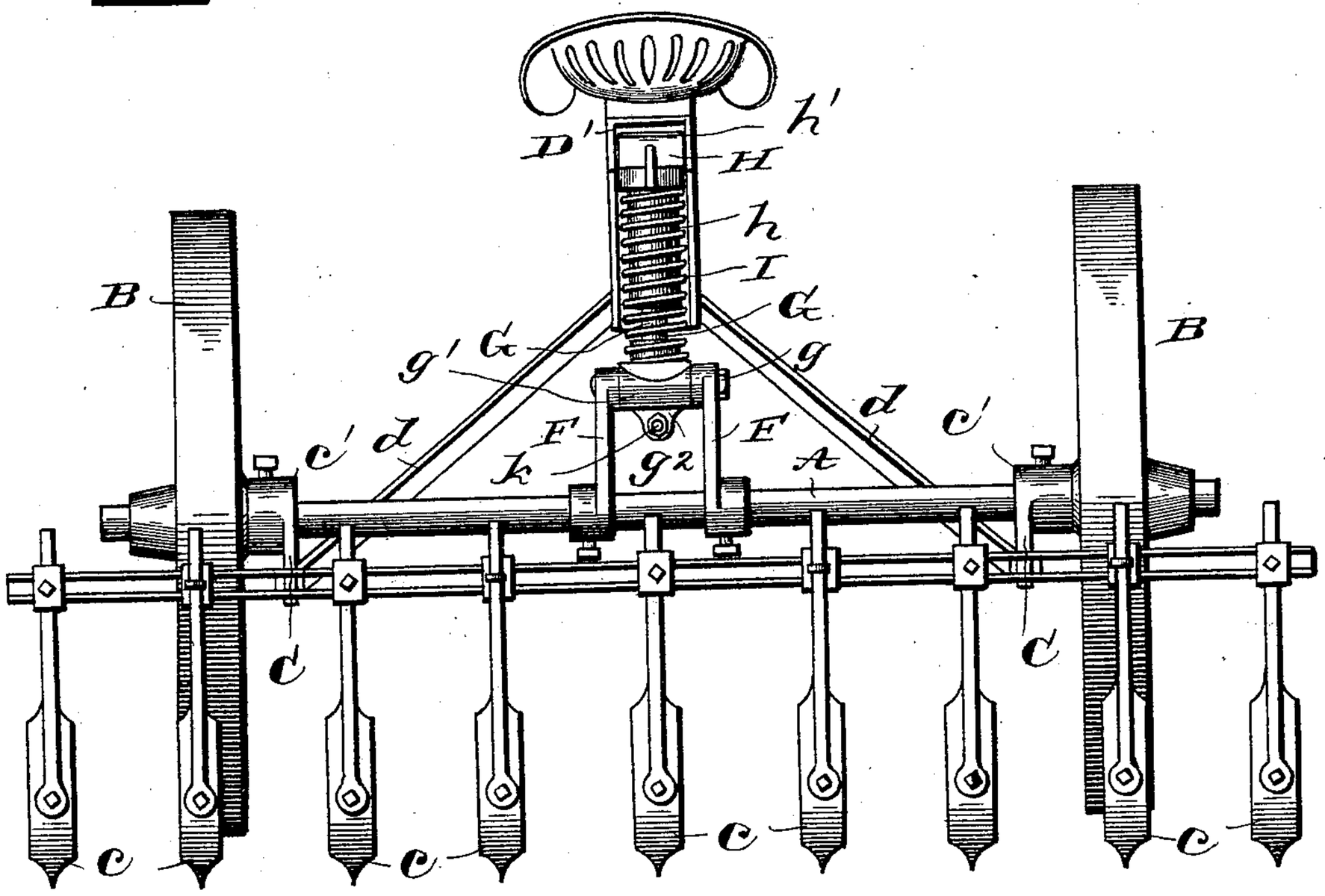
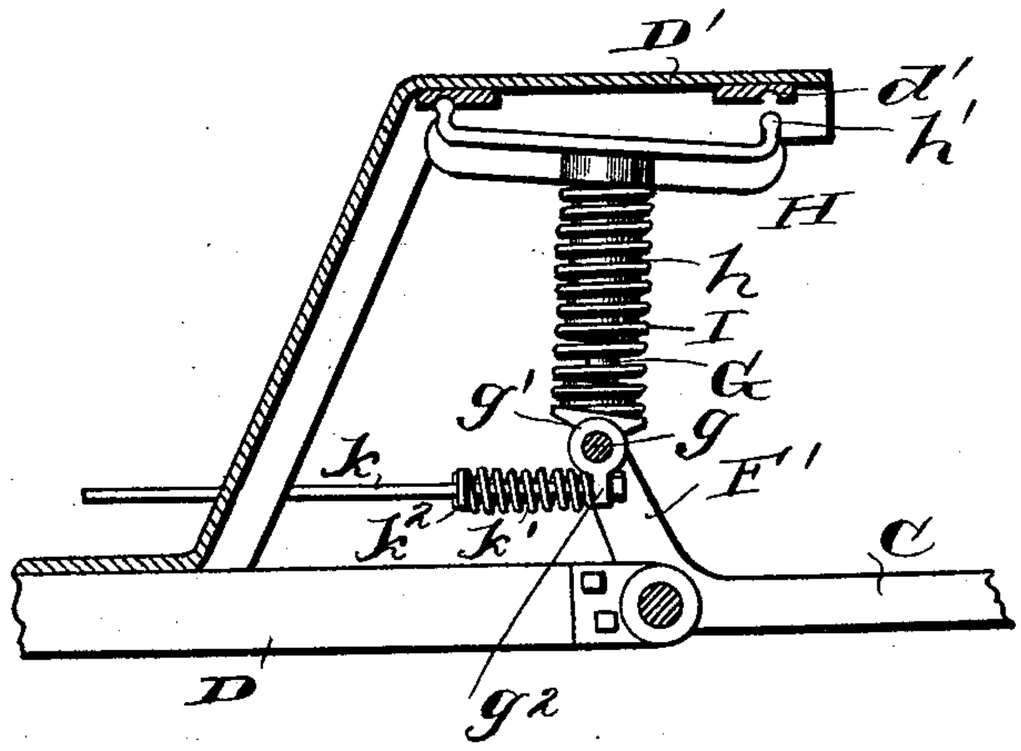


Fig. 5.



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(No Model.)

4 Sheets—Sheet 3.

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CULTIVATOR.

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Fig. 6.

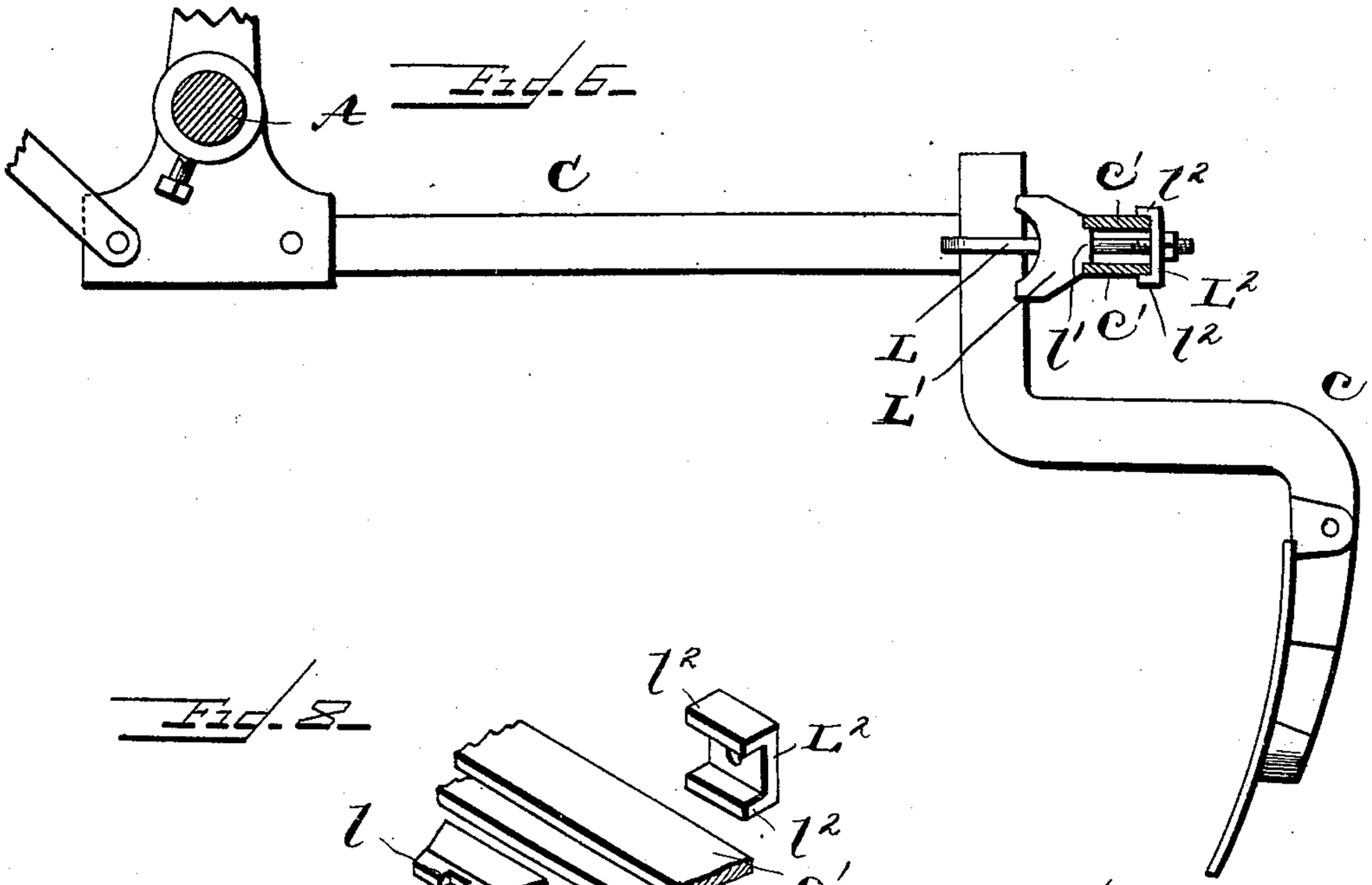


Fig. 8.

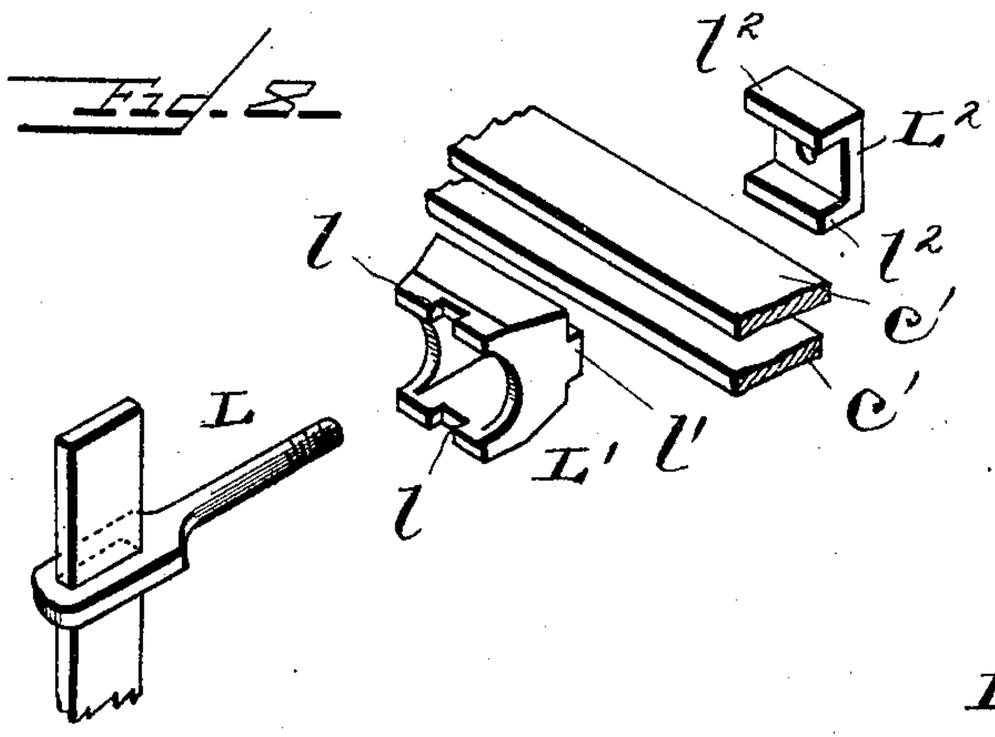


Fig. 7.

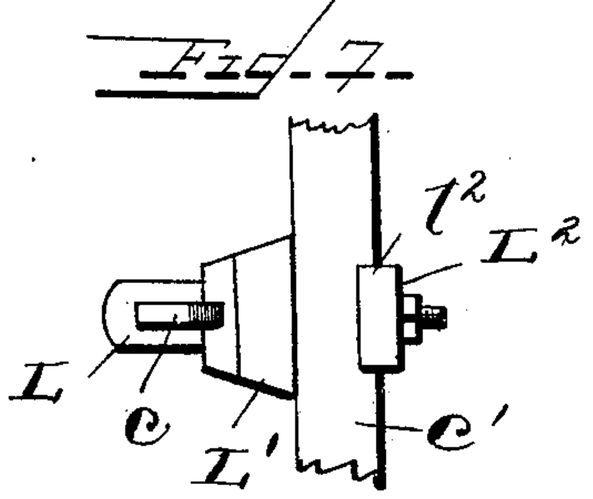
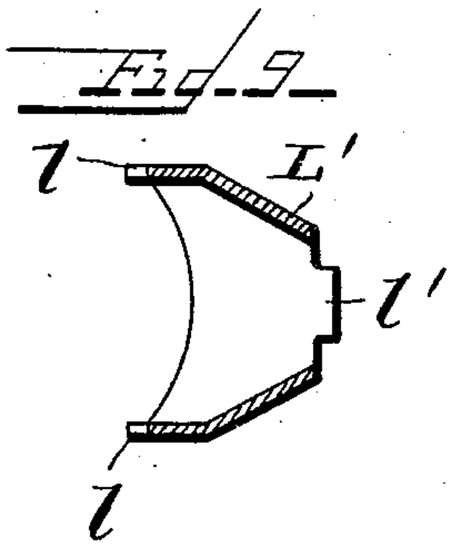


Fig. 9.



Witnesses.

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(No Model.) 4 Sheets—Sheet 4.

G. L. ROBY.

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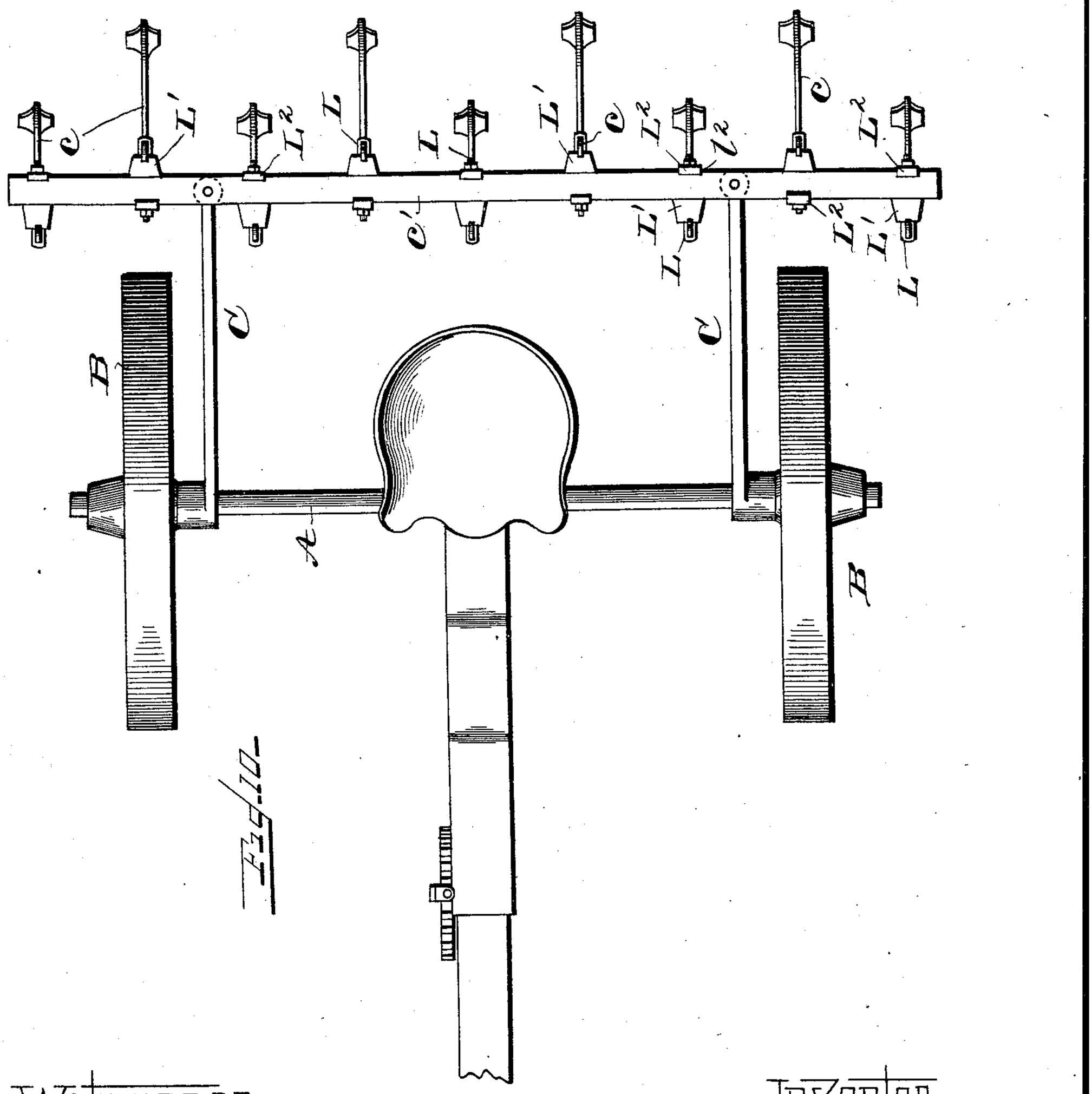

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UNITED STATES PATENT OFFICE.

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

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 587,067, dated July 27, 1897.

Application filed March 10, 1897. Serial No. 626,802. (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 consists in the novel features of construction and combination of parts hereinafter described, reference being had to the accompanying drawings, which show one form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 represents a vertical longitudinal sectional view of a cultivator embodying my invention, showing the cultivator frame and shovels raised. Fig. 2 is a detail view of a portion of the construction in the position which it occupies when the frame and shovels are in working position. Fig. 3 is a detail rear view of a portion of the mechanism. Fig. 4 is a rear view of the cultivator shown in Fig. 1. Fig. 5 is a detail view showing a slightly different method of arranging the cultivator-frame. Fig. 6 is an enlarged view of the cultivator-frame, showing the clip for attaching the cultivator-shovels. Fig. 7 is a top plan view of one of said clips. Fig. 8 is a perspective view of the parts of the clip separated and portions of the frame and shovel. Fig. 9 is a detail sectional view of a part of the clip. Fig. 10 is a top plan view of the cultivator.

In the drawings, A represents the axle of the cultivator; B B, the supporting-wheels; C, the cultivator-frame, of any usual or preferred construction and provided with shovels *c c*.

D represents the tongue, provided with a rearwardly-projecting bar D′, supporting the driver's seat E and pivotally connected with respect to the cultivator-frame. In the form shown in Figs. 1 to 4, inclusive, the tongue is provided with arms *d d*, which have their lower ends pivoted to the cultivator-frame, as shown. The cultivator-frame C is shown in these figures as rigidly secured to the axle A by means of collars *c′ c′* on said frame surrounding the axle and secured thereto by set-screws.

F F represents a pair of arms for raising or depressing the cultivator-frame, said arms having a fixed relation to the said frame. In the figures just referred to said arms are rigidly secured to the axle A by means of collars encircling said axle and provided with set-screws. This construction is a convenient one, as it enables the said arms to be adjusted with respect to the cultivator-frame. The upper ends of said arms are preferably provided with apertures for the passage of a bolt or pin.

G represents a guide-rod which is secured to the said arms by means of a bolt *g*, which passes through the apertures therein and through a sleeve *g′* on the lower end of said rod.

H represents what I term the "fulcrum-plate," provided with a sleeve *h*, engaging and sliding on the guide-rod G and provided on its upper side with an upwardly-extending projection *h′* at each end, preferably rounded, as shown, to engage seats or bearings *d′* on the under side of the seat-support D′, either formed therein or secured thereto, as shown.

A coiled spring I surrounds the sleeve *h* and guide-rod G between the fulcrum-plate and sleeve *g′* and is adapted to exert a strong downward pressure on the arms F F, which will either tend to hold the plows out of the ground or press them into the soil, according as the arms F F are forward or back of the axle A, as will be readily seen by reference to the drawings. In moving the arms F F from one position to the other the lower end of rod G moves with them and thus produces a rocking movement of the fulcrum-plate H, which ordinarily has only one of its lugs *h′* in engagement with its respective seat or bearing *d′*. As the fulcrum-plate is rocked the other lug *h′* will be brought into its seat, and as soon as this is accomplished the further movement of said plate in the same direction will remove the lug formerly seated

from its bearing, and thus transfer the bearing of the plate from one end to the other, as will be readily seen.

In order to move the arms F F from a position forward of the axle to a position in rear of the same, I employ a hand-lever K, pivoted to the tongue D, provided with the usual ratchet-and-pawl construction for locking the same and having its lower end connected by a rod *k* with the said arms. I conveniently provide the sleeve *g* of the rod G with a perforated lug or ear g^2 below the same and pass the rod *k* through said ear, providing it on the rear side with a nut, and I prefer to provide it on the front side of said lug with a spring *k'*, interposed between the ear g^2 and a shoulder k^2 on said rod.

In Fig. 1 the shovels and cultivator-frame are shown in raised position. In order to depress the shovels, the hand-lever is moved so as to throw the lower end of rod G and the arms F F rearwardly. As soon as the said parts have moved past a position in line with the axle the force of the spring will be exerted to press the arms F F rearwardly and will force the cultivator frame and shovels downwardly, at the same time changing the bearing-point of the fulcrum-plate, as previously described. Fig. 2 shows the parts in this position. To raise the shovels, the hand-lever is moved so as to draw the arms F F and lower end of rod G forward of the axle. The spring *k'* acts as a cushion when the rod *k* is moved rearwardly, and I may provide said rod with an additional spring k^2 in rear of the ear g^2, if it is desired, as shown in Fig. 2.

In Fig. 5 I have shown a slightly-modified construction which differs from the form just described only in that the frame of the cultivator is pivotally mounted on the axle and the arms F' F' are made integral with or secured to portions of the frame. In this construction the tongue is connected rigidly with the axle.

In Figs. 6 to 9, inclusive, I have shown a clip for attaching the shovels to the cultivator-frame. C is the cultivator-frame, and *c' c'* are two horizontal frame-bars arranged parallel one above the other at the rear of said frame. The tooth-clip is composed of three parts—a bolt L, having a recess or slot in its head to receive the shanks of the shovel *c*, the spacing-block L', having recesses *l l* in its front side to receive the shank and projections *l' l'* on its rear side to enter between the frame-bars *c' c'*, and the yoke L^2, adapted to engage the rear side of the frame-bars *c' c'* and having a central aperture for the passage of the bolt and flanges l^2 l^2 to engage the frame-bars above and below the same to prevent them from spreading. When the parts are assembled, a nut is placed on the bolt L, and by tightening the said nut the shank of the shovel will be securely held in position. The shovel can be adjusted vertically and can also be moved laterally along the frame-bars *c' c'* to any desired position.

It is usual in many cultivators now in use to make the horizontal portions of the shanks of shovels of different lengths, so that when the shovels are secured to the frame the shovels will be in different lines. It will be observed that my improved clips can be used both on the front and on the rear side of the frame-bars *c' c'*, and by making all the shovel-shanks alike and attaching part of them in front of the bars *c' c'* and part in rear of said bars, as shown in Fig. 10, I secure the same result that is secured in other constructions by using different styles of shanks.

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

1. In a wheel-cultivator the combination with a shovel-carrying frame having a movement about a horizontal axis, and having crank-arms extending from said axis, of a compression-spring extending between said crank-arms and a fulcrum-plate having two bearings upon a part of the stationary frame of the cultivator and means for moving the said crank out of and into alinement with the spring, substantially as described.

2. In a wheel-cultivator the combination with a shovel-carrying frame, having a movement about a horizontal axis, and having crank-arms extending therefrom, of a compression-spring extending from said arms to a fulcrum-plate having two bearings, one on each side of the said spring upon a part of the stationary frame of the cultivator, and means for moving the said crank-arms into and out of alinement with said spring, substantially as described.

3. In a wheel-cultivator, the combination with a shovel-carrying frame having a vertical movement about a horizontal axis, and having crank-arms adjacent to said axis, of a guide-rod pivoted to said arms, a fulcrum-plate having two separated bearing-points adapted to engage stationary seats, and a sleeve engaging said guide-rod, a spring surrounding said guide-rod and sleeve between said fulcrum-plate and said arms, an operating-lever and connections between said lever and the said arms, substantially as described.

4. In a wheel-cultivator, the combination with a shovel-carrying frame having a vertical movement about a horizontal axis, and provided with crank-arms adjacent to said axis, of a guide-rod pivoted to said arms, a fulcrum-plate having separated bearing-points, and a sleeve engaging said guide-rod, stationary bearing-seats for the fulcrum-plate, a spring surrounding said guide-rod and sleeve between said fulcrum-plate and said crank-arms, an operating-lever, a rod operatively connected with said lever and said arms, and a cushioning-spring interposed between said rod and its connection with said arms, substantially as described.

5. In a cultivator, the combination with the parallel horizontal supporting-bars located one above the other, of a shovel-securing clip comprising among its members, the bolt hav-

ing a slotted portion to receive the shank of a cultivator-shovel, the spacing-block having an aperture for the passage of said bolt, and provided on one face with recesses to receive the said shank and on the opposite face with projections adapted to enter the space between said parallel bars, and the yoke having an aperture for the bolt, and having lugs to engage the exterior of said parallel bars, substantially as described.

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

GEORGE L. ROBY.

Witnesses:
CHAS. EASTMAN,
W. D. BRUNDAGE.