

No. 741,780.

PATENTED OCT. 20, 1903.

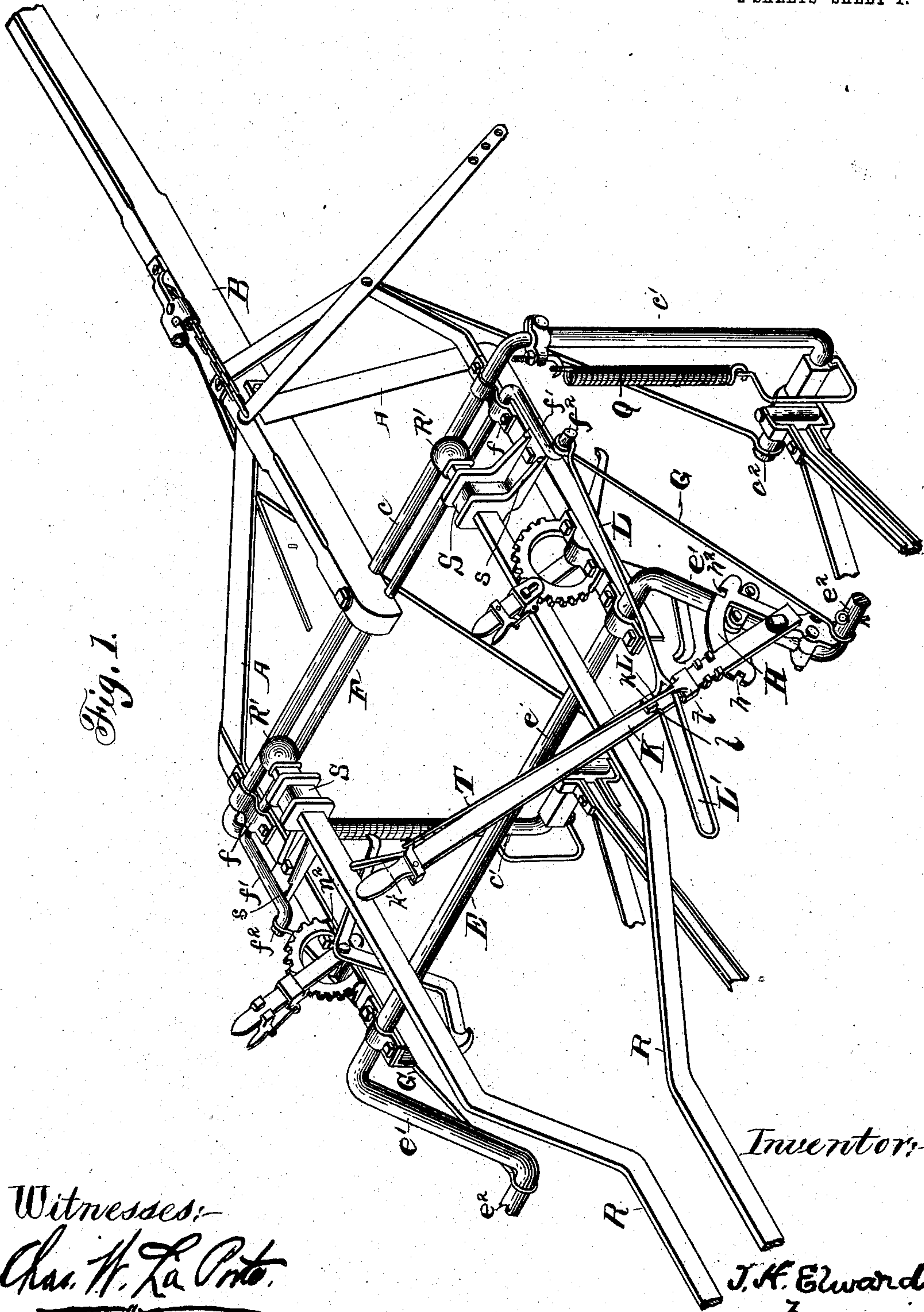
J. H. ELWARD.
CULTIVATOR.

APPLICATION FILED APR. 17, 1896.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



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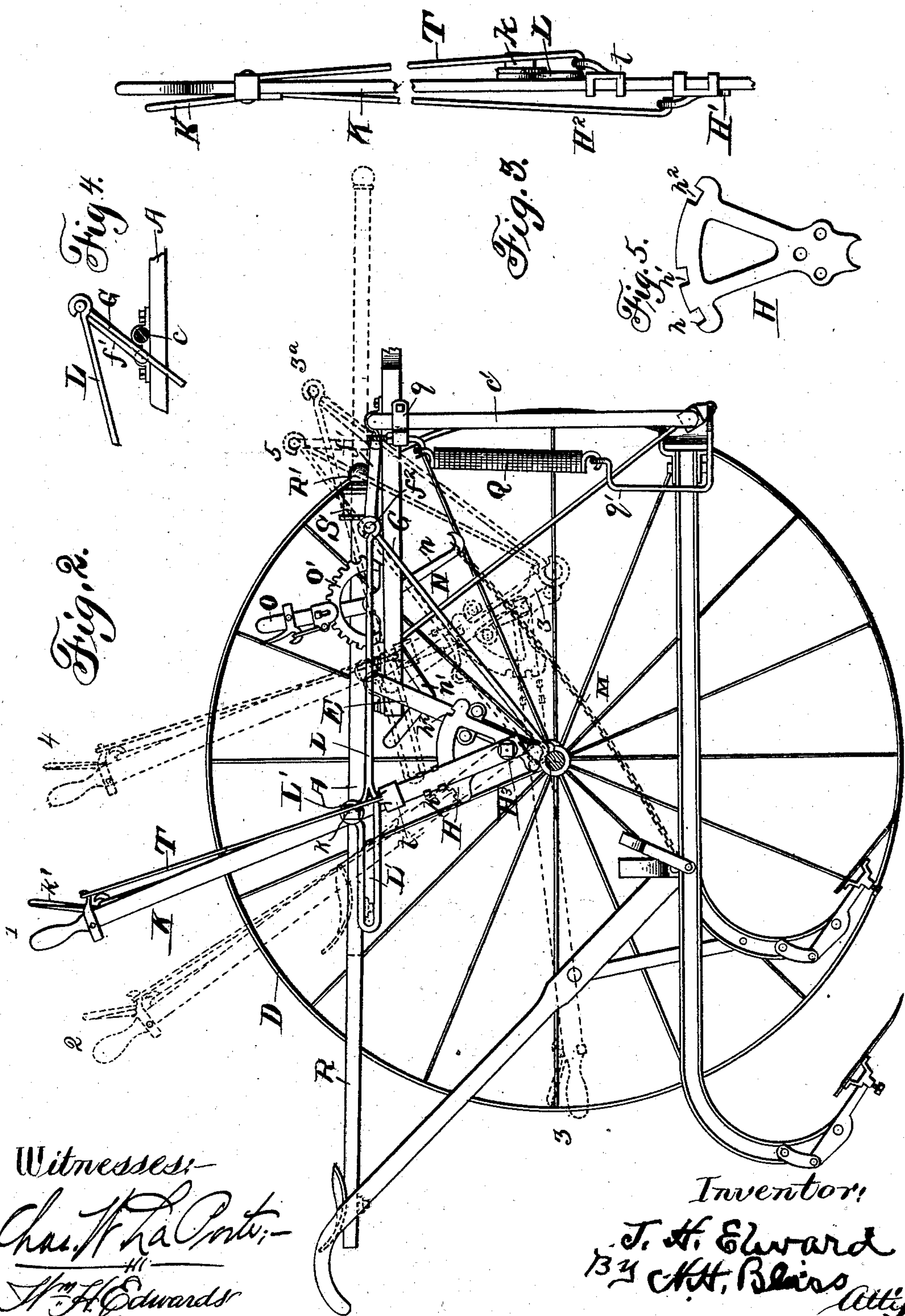
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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE.

JOHN H. ELWARD, OF PEORIA, ILLINOIS.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 741,780, dated October 20, 1903.

Application filed April 17, 1896. Serial No. 588,005. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. ELWARD, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have
 5 invented certain new and useful Improvements in Cultivators; and I do 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
 10 make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates principally to combined walking and riding cultivators; and my improvements consist in the parts and combinations thereof hereinafter particularly described and pointed out.

Figure 1 is a perspective view showing the
 20 framework of a cultivator embodying my improvements. Fig. 2 is a side elevation of the body of the machine. Figs. 3, 4, and 5 are detail views.

In the embodiment of my invention illustrated in the accompanying drawings I have shown a main frame, consisting of the side bars A, the tongue B, and the transverse yoke-shaped frame, comprising the cross top bar or member c, the depending side parts c',
 30 and the inwardly-turned spindles c². The forward ends of the longitudinal side bars of the said main frame are inclined inward and connected to the tongue. The said main frame is supported and carried by wheels D,
 35 which are mounted on a rocking or vibratable axle or wheel-frame E, comprising the top cross bar e, mounted in journal-bearings on the side bars A, the depending end bars or arms e' terminating at their lower ends in
 40 the outwardly-turned spindles on which the wheels D are mounted.

In bearings f, arranged on the main frame between the yoke cross-bar c thereof and the rocking wheel-frame or axle E, is journaled a
 45 rock-shaft F, the ends of which are bent to provide the arms f', extending at right angles to the body of the shaft and terminating in the outwardly-turned portions f², which extend parallel to the body of the said shaft.
 50 The wheel-spindles e² are connected with the end portions f² of the locking rock-shaft F

by means of rod-like braces G, by means of which any motion of the wheel-frame or axle E will be transmitted to said shaft F.

I have combined with the rocking wheel-frame or axle means by which it can be held
 55 securely in either of several positions in order that the weight of the machine on the horse's neck may be maintained the same at all times whether the operator is riding on
 60 the machine or walking.

As shown, a segment H is rigidly secured to one of the depending arms e' of said frame, and an operating-lever K is fulcrumed at one side of such segment and provided with a
 65 suitable lock bolt or dog H' for engaging with the notches h h' h², formed in the said segment, and with link H² and thumb-latch K'.

L designates a lock-rod, one end of which is connected with the outwardly-turned portion f² at one end of the shaft F, while the
 70 other end is formed with an elongated loop or slot L'. A laterally-projecting stud or pin k on the operating-lever projects into the said slot L' and is adapted to fit snugly in a notch
 75 or offset formed in the said connecting-rod L near the forward end of and communicating with the slot L'.

The plow-gangs, which may be of any preferred style, are suitably mounted on the inwardly-turned spindles c² of the forward
 80 main-frame yoke in such manner as to vibrate freely vertically or horizontally, and with such beams are connected the lower ends of lifting chains or cables M. The
 85 upper end of each of these chains is connected to an arm n of a lever N, which is fulcrumed on the main frame. The other arm n' of this lever is provided at its free end with a support or rest for the foot of the operator,
 90 by means of which he can readily vary the elevation of the gangs. A hand-lever O is fulcrumed on the same pivot or center as the lever N and is provided with a dog or latch adapted to engage with the teeth or
 95 notches formed in a segment O'. By means of this hand-lever the gangs can be held in the desired position and adjusted to cut to any desired depth. The lever N is provided on one side with a laterally-projecting flange
 100 n², which prevents the front end of the said lever, to which the lifting-chain M is at-

tached, from being depressed beyond the desired limit, but allows sufficient motion of the lever N to elevate the gang when desired.

To the forward ends of the gang-supports, 5 which are fitted on the inwardly-extending spindles c^2 , are connected lifting-springs Q. As shown, the upper end of each of these springs is connected to a hook adjustably connected to a clamp q , adapted to be firmly secured to 10 the portion c' of the main-frame yoke, and its lower end is connected to one end of an angular link q' , which in turn is connected to the forward gang-support below and in front of the axis thereof. This construction and ar- 15 rangement of parts insures an even and steady pressure on the chains M, supporting the beams, and causes the plows to run smoothly and at an even depth. When the rear ends of the beams are depressed below the normal 20 level, the tendency of the springs Q is to draw the plows deeper into the ground, while when the rear ends of the beams are elevated or raised above the level the action of the springs is to lift up the rear ends of the beams. The 25 springs Q, it will be noticed, are connected to the sleeves, which are fitted on the spindles c^2 in the plane of the axis of said sleeves.

The driver's seat is mounted on supporting- 30 bars R, which rest on the top of the rocking axle E and have their forward ends extended through guides S, secured to the sides A of the main frame. As shown, the flanges s , by which the guides S are attached to the frame, project somewhat beyond the sides A and form 35 supports for the cranked portions f' of the locking rock-shaft F when the parts are in the positions shown in full lines in the drawings or when the parts are arranged for use as a riding-cultivator.

40 t is a sleeve fitted on the lever K below the rod L and connected to the thumb-latch k' of said lever by link T.

When it is desired to convert the machine 45 into a walking-cultivator, the seat-supports R are moved longitudinally through the guides S into the position shown in dotted lines in Fig. 2. Balls or stop-blocks R' are secured to the forward ends of the seat-sup- 50 port, which may be formed from a single piece bent to form the two bars R, if desired, to prevent such support from being moved rearwardly out of the guide-sleeves S.

When it is desired to use the machine as a 55 walking-cultivator, the crank-axle must be rocked, so that the wheel-spindles e^2 will be moved forward. This is accomplished by pressing thumb-latch k' , which through links K and T simultaneously draws dog H' out of 60 notch h' and causes sleeve t to lift the slotted lock-bar L away from stud k , then rocking the freed lever K backward around its pivot H^3 until the dog H' engages in notch h , the lever then being in the position shown in dot- 65 ted lines at 2, Fig. 2. Thereupon the operator pulls downward still farther on the lever K, rocking it now around the axis of the part e of the wheel-frame or crank-axle, and con-

sequently the wheels and the arms e' are 70 rocked forward and the lever downward until the said parts are in the position indicated by the dotted lines at 3, Fig. 2. This move- 75 ment of these parts causes (by pushing on braces G) the crank ends $f' f^2$ of the rock-shaft F to also swing upward and forward into the positions shown in dotted lines at 3^a 80 in Fig. 2. At this time the crank-arms f' bear forward and downward upon the cross part c of the main frame and lock the wheels against further forward swing, and the latter and their supporting-frame or the axle are 85 held in the position required for a walking-cultivator. Having thus utilized the lever K for this purpose, the operator again presses thumb-latch k' and releases the lever from 90 the notch h in the segment H and swings it loosely upward around its pivot H^3 (which by the previous action was carried to the dotted position shown in Fig. 2) until it, the lever, 95 stands as shown by the dotted lines at 4, Fig. 2, at which time the dog H' can engage with the notch h^2 . When the lever K is in the position shown by dotted lines at 3, its stud k is in the rear end of the loop L' in bar L; but 100 as it is swung loosely, as last described, up toward the dotted position at 4 the stud k reaches the offset l and the lock-rod L drops far enough to have the stud firmly seated in 105 said offset. When the parts are in these positions, as shown by dotted lines 3, 3^a, and 4, they are all firmly locked. The rod L prevents any accidental backward movement of 110 the wheel-arms in case the wheels should strike a severe obstruction sufficient to jolt the crank-arms f' upward and backward, and said crank-arms f' by bearing forward against 115 the cross-bar c prevent any further forward movement of the wheel-arms. Now, on the contrary, when it is desired to return the parts from this position for walking to that 120 for riding (shown in full lines, Fig. 2) it is done as follows: The operator presses thumb-latch k' , (lever K being as shown in dotted lines at 4, Fig. 2,) and thereby releases dog 125 H' from notch h^2 and simultaneously, through parts T t , lifts the locking-rod L away from engagement with stud k and then rocks the lever K down again to the position shown in dotted lines 3, and while doing so the 130 stud k reaches the rear end of the slot L' , and as the operator continues the movement of lever K said pin moves rod L longitudinally and pulls the crank-arms f' upward and backward until they pass the vertical line of their axis, thereby unlocking the wheel- 135 frame. When the lever K has reached the position shown in dotted lines 3, the dog H' engages with the notch h and the lever becomes rigid with the segment and with the arms e' of the wheel-frame, so that the operator by lifting up on the lever can rock the 140 wheels back on the axis of part e , and he so rocks them until the lever K reaches the position shown in dotted lines at 2 and the other parts reach the positions shown in full lines.

Then, finally, he again presses thumb-latch k' to release the lever from notch h and moves the lever upward slightly to the point where the dog engages the notch h' , the lever then being in the position shown in full lines. This last movement brings the stud k again into line with the offset L' , which permits the lock-rod I to drop and by engaging with said stud provide a stop for preventing the crank-arms f' from rising. In short, there is provided a rigid lock to prevent the parts from being displaced from their newly-adjusted positions for riding.

It will be seen that l provide a wheel adjusting and locking mechanism for wheels having a frame or carrier adjustable longitudinally of the main frame, comprising braces for the wheel-frame movable therewith, a lever for adjusting the wheel-frame, and a lock supplemental to the said parts adapted to rigidly hold them in either of two positions. It will also be seen that in the construction selected for illustration the lever is supported movably directly upon the adjustable wheel-frame and can be adjusted either with the latter or independently of it and that the lock is interposed directly between the lever and the braces for the wheel-frame; but in numerous respects there can be modification without departing from my invention.

In modifying the mechanism within the scope of the present invention proper proportions of the parts should be secured. Thus the part L may be so arranged as to exert its thrusting and pulling action when locking the other parts in position or when starting them from one position to the other, in which case the length of the slot or looped part L' will have the proper dimensions to correspond to the normal positions of the crank ends f^2 of the rock-shaft F . By preference these crank ends in either position of the wheels are in or nearly in the line from the wheel-axis to the axis of shaft F . The nearer they are to that line the greater will be the holding action of the braces G on the wheels. If this hold is made quite strong, it can be overcome by having the slot or loop at L' of such length that the lever can thrust or pull upon the rod L in starting the crank ends f^2 from their holding positions.

What I claim is—

1. In a walking and riding cultivator, the combination of the main frame, the plow-gangs hinged thereto, the vibrating wheel-frame, the seat supported on the main frame, the lever independent of the seat-support for vibrating the wheel-frame, the swinging brace for the wheel-frame, and the lock adapted to positively hold the wheel-frame and said brace in either of two positions independently of the main frame and seat-support, substantially as set forth.

2. In a walking and riding cultivator, the combination of the main frame, the plow-gangs hinged thereto, the vibrating wheel-

frame, the vibrating brace for the wheel-frame, the seat-frame, the lever supplemental to the seat-frame for moving the wheel-frame and connected thereto independently of the brace, and the lock supplemental to the lever and adapted to lock the brace and the vibrating wheel-frame in both of two positions, substantially as set forth.

3. In a walking and riding cultivator, the combination of the main frame, the plow-gangs hinged thereto, the vibrating wheel-frame, the seat-frame, the rock-shaft, the brace connecting the rock-shaft with the wheel-frame, the lever independent of the seat-frame for swinging the wheel-frame, and the lock independent of the brace interposed between the rock-shaft and the seat-frame for locking the brace and the wheel-frame in both of two positions.

4. In a walking and riding cultivator, the combination of the main frame, the plow-gangs hinged thereto, the vibrating wheel-frame, the vibrating brace therefor, and the vibrating lever, supplemental to said brace, movable independently of the wheel-frame and also movable therewith, relatively to the main frame, substantially as set forth.

5. In a cultivator having adjustable wheels, the combination of the main frame, the plow-gangs hinged thereto, the wheel-frame adjustable longitudinally of the main frame, the brace-links connected with the wheel-frame, the vibrating supports for said links, the lever mounted on the wheel-frame, and the detachable lock between the lever and the vibrating support for the brace-links, substantially as set forth.

6. In a cultivator having adjustable wheels, the combination of the main frame, the plow-gangs hinged thereto, the wheel-frame adjustable longitudinally of the main frame, the movable braces between the wheel-frame and the main frame, and the lever supplemental thereto and mounted upon the wheel-frame and movable in relation thereto, substantially as set forth.

7. In a cultivator having adjustable wheels, the combination of the main frame, the plow-gangs hinged thereto, the wheel-frame adjustable longitudinally of the main frame, the brace device between the wheel-frame, and the main frame, the vibrating lever, a lock interposed between the lever and said brace device, and means carried by the lever for releasing the lock, substantially as set forth.

8. In a cultivator, the combination of the main frame, the plow-gangs supported from said frame, the swinging axle, the wheels mounted on said axle, the lever for moving the axle, a rock-shaft journaled on the main frame, at one side of the axle, and a rod connected at one end to said shaft and adapted to be locked at its other end to the operating-lever, substantially as set forth.

9. In a cultivator, the combination of the main frame, the plow-gangs supported from

said frame, the swinging axle, the wheels on the axle, the operating-lever for moving the axle forward and back, a rock-shaft journaled on the main frame and permanently connected with the axle, and a lock-rod having one end secured to said rock-shaft and its other end slotted to receive a pin or stud on the operating-lever, substantially as set forth.

10. In a cultivator, the combination of the main frame, the plow-gangs supported from said frame, the swinging axle, the wheels, the operating-lever for moving the axle forward and back, a rock-shaft journaled on the main frame and connected with the wheel-spindles of the axle, a lock-rod connected at one end with said rock-shaft, and having its other end arranged to engage with the pin or stud on the operating-lever, and means for moving the lock-rod longitudinally of the operating-lever to disengage it from said stud or pin, substantially as and for the purpose set forth.

11. In a cultivator, the combination with the main frame, the plow-gangs supported from such frame, the swinging axle carrying the wheels, and means for rocking said axle, of a seat-support resting on the axle, and guides secured to the main frame and permitting free longitudinal movement of the bars of the seat-support, substantially as set forth.

12. In a cultivator, the combination of the main frame, the plow-gangs supported from such frame, the swinging axle, the wheels, an operating-lever for moving the axle and wheels, a rock-shaft journaled on the main frame and having cranks, f' , at its ends, links connecting said cranks with the wheel-spindles, a lock-rod connected to one of said cranks and adapted to be engaged with the operating-lever, and plates secured to the main frame and adapted to support the cranks, f' when the wheels and axle are in their rearward position, substantially as set forth.

13. In a cultivator, the combination of the main frame, the plow-gang, the hinged coupling connecting the plow-gang with the main frame, the spring having its upper end fixed in a vertical plane behind the axis, a loop connected to the lower end of the spring and extending downward behind said axis and forward under the same, to a point in front of the vertical line of the same, substantially as set forth.

14. In a walking and riding cultivator, the combination of the main frame, the swinging axle, the lever for adjusting the axle, pivotally supported by the axle, the link connected to the axle movable bodily therewith, the pitman or thrusting and pulling rod connected to the link and also connected to the lever, substantially as set forth.

15. In a walking and riding cultivator, the combination of the main frame, the swinging axle, the seat-frame, the lever, independent of the seat-frame, the brace-link connected to the axle and the thrusting or pulling rod, L, connected to the link and to the lever, and means for detachably fastening the rod, L, to the lever, substantially as set forth.

16. In a walking and riding cultivator, the combination of the main frame, the swinging axle, the driver's seat, the seat-frame supported on the main frame, the lever for adjusting the axle, adapted to move bodily forward and backward around its pivot, the brace-link connected to the axle, and means interposed between the brace-link and the lever for transmitting movement from the lever to the axle, substantially as set forth.

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

JOHN H. ELWARD.

Witnesses:

L. E. HALE,

G. T. GILLIAM.