

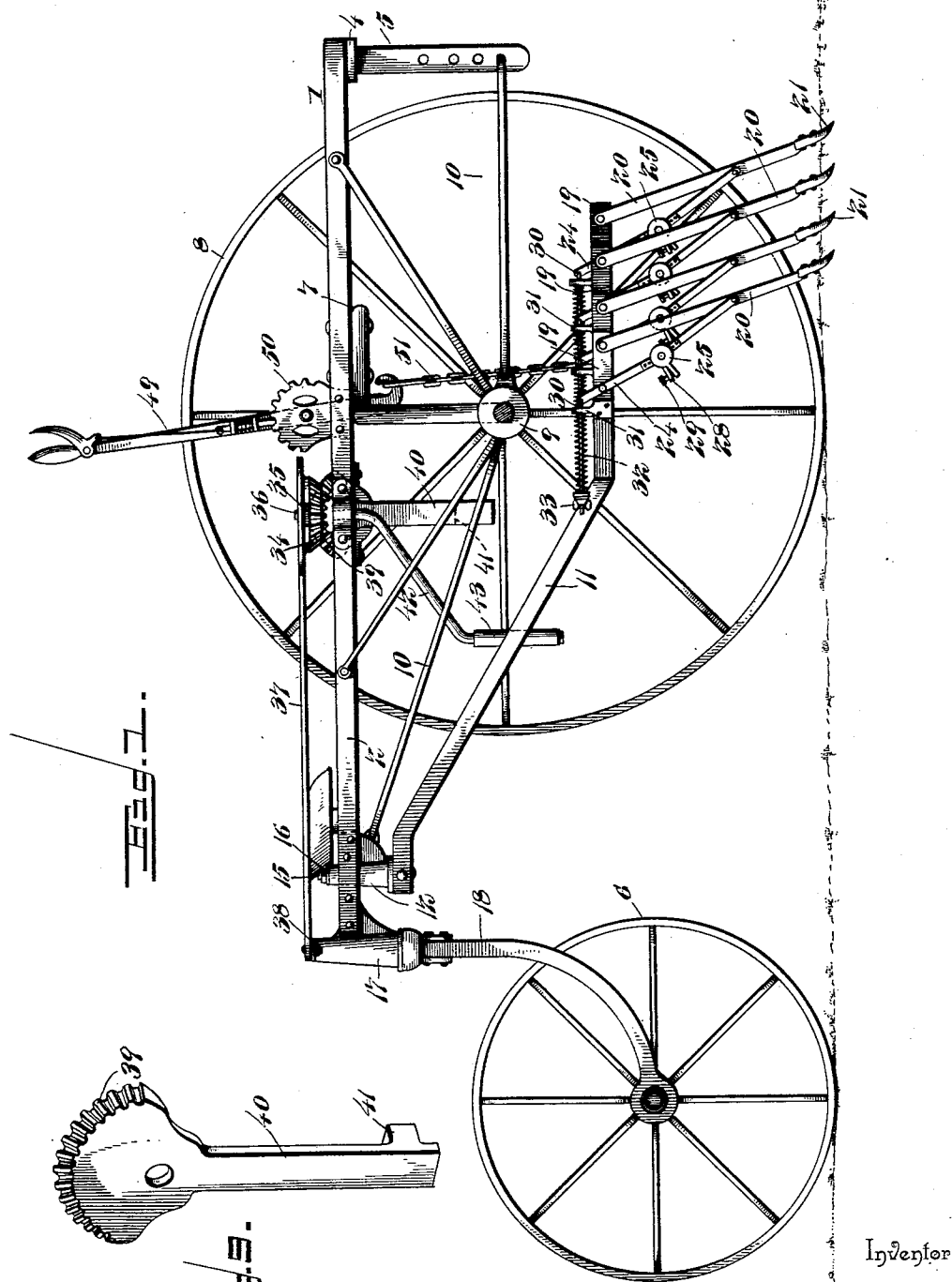
(No Model.)

3 Sheets—Sheet 1.

H. G. THOMPSON.
WHEELED CULTIVATOR.

No. 588,033.

Patented Aug. 10, 1897.



Witnesses

E. H. Stewart.
R. M. Smith.

Herschel G. Thompson
By *his* Attorneys,

C. A. Snow & Co.

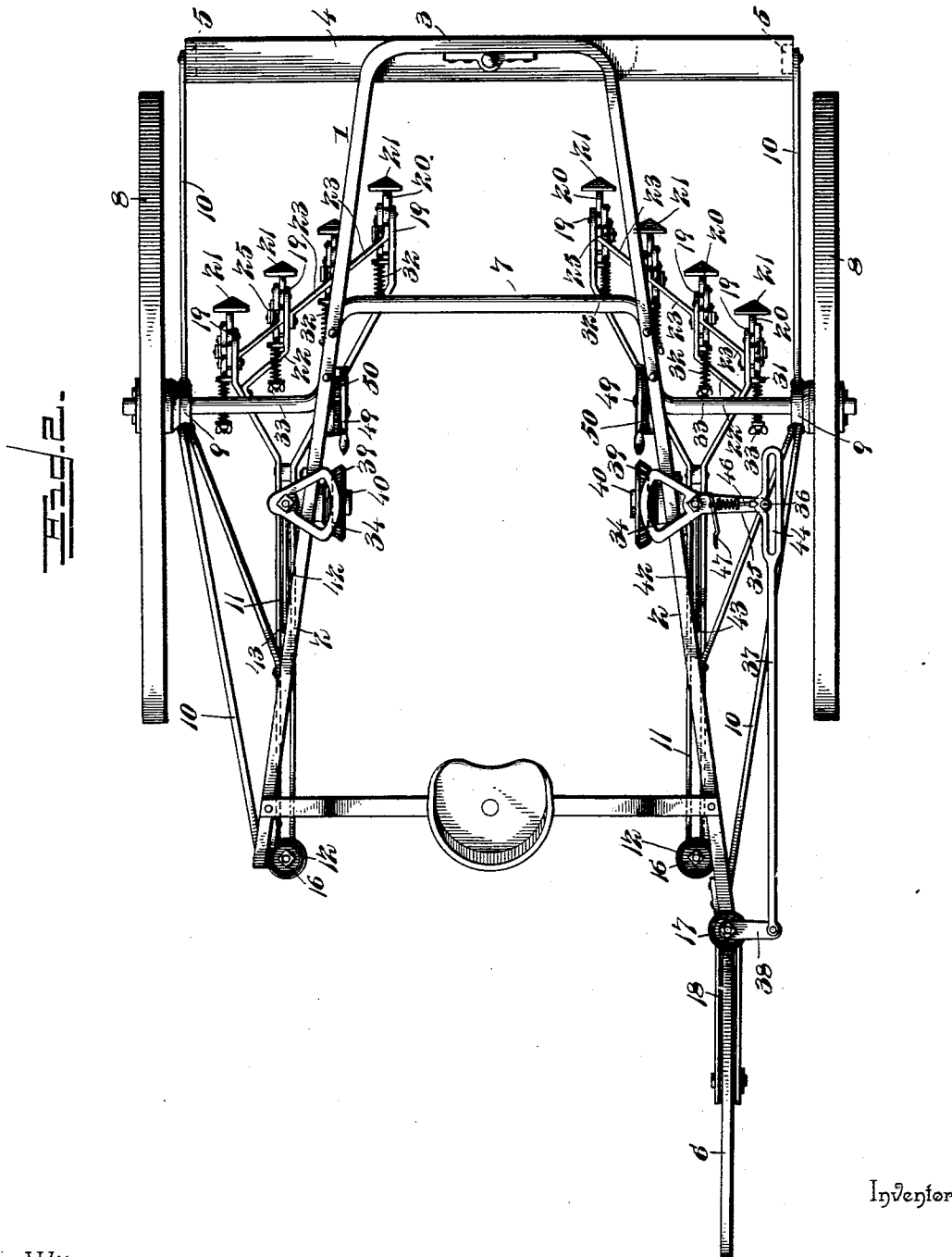
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Inventor

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R. M. Smith.

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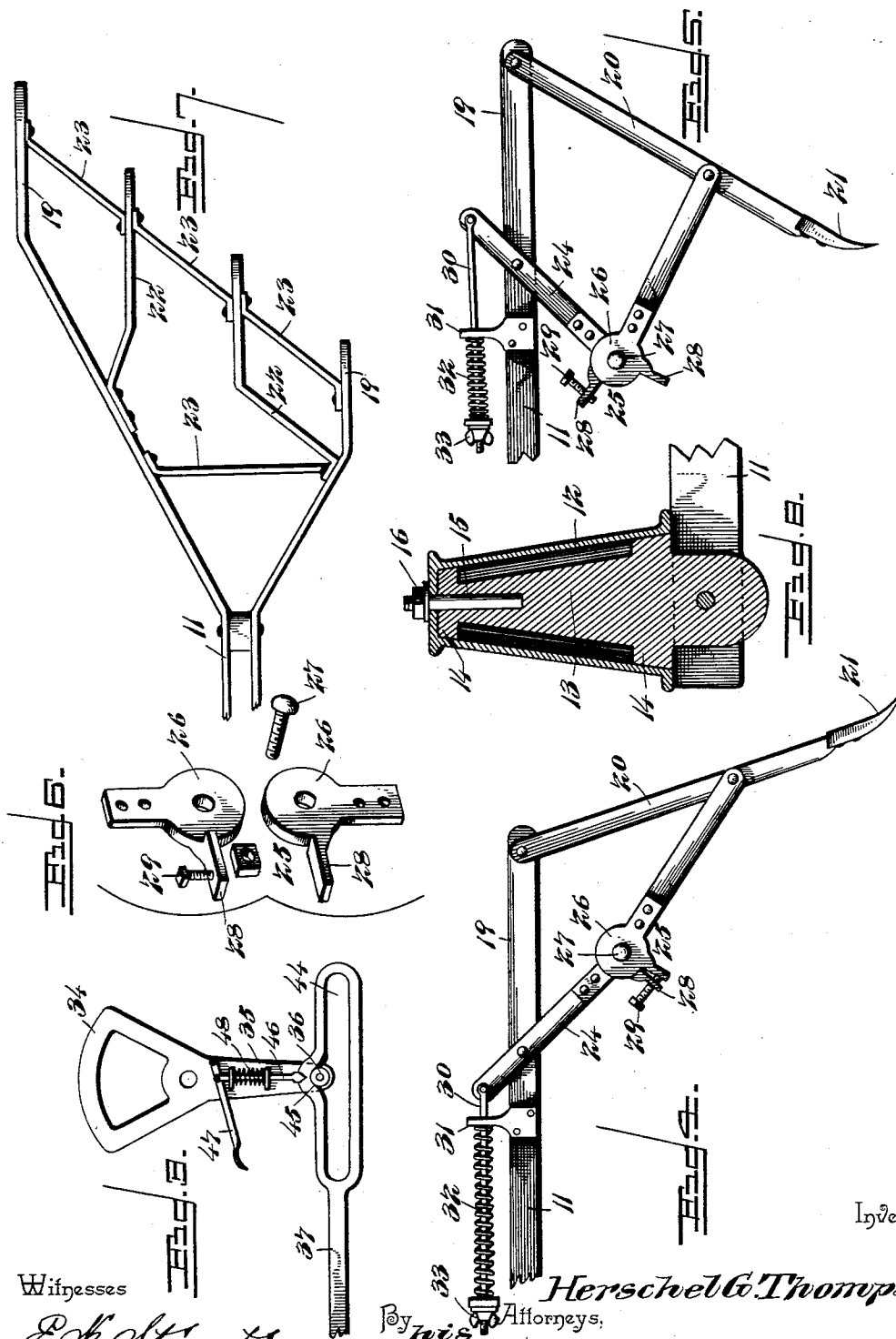
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By *H. G. Thompson*

Attorneys,

Herschel G. Thompson

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

HERSCHEL G. THOMPSON, OF UNION CITY, OHIO, ASSIGNOR OF ONE-HALF
TO CHARLES W. PIERCE AND CLARENCE S. PIERCE, OF SAME PLACE.

WHEELED CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 588,033, dated August 10, 1897.

Application filed September 12, 1896. Serial No. 605,647. (No model.)

To all whom it may concern:

Be it known that I, HERSCHEL G. THOMPSON, a citizen of the United States, residing at Union City, in the county of Darke and State of Ohio, have invented a new and useful Wheeled Cultivator, of which the following is a specification.

This invention relates to wheeled cultivators, and aims to provide novel and automatic mechanism for adjusting the angles of the plow-gangs, enabling the cultivator to proceed to the extreme end of the rows of corn, &c., and to readily swing preparatory to the return trip. Provision is also made whereby the shovels are adapted to severally or collectively yield upon striking hard objects, and the plow-gangs may be adjusted by the operator either laterally in a horizontal plane or they may be raised or lowered to any desired degree, thus securing the proper positioning and penetration of the shovels. Provision is also made for throwing the trailing and guiding wheel into or out of operative engagement with one of the adjustable plow-gangs, whereby the latter may be adjusted by or independently of such wheel. By the improved construction the plow-gangs are also located in advance of the operator, who may thus observe their action and who thus obtains better control of the cultivator and is enabled to perform the work in a more satisfactory manner. Other objects and advantages of the invention will appear in the course of the ensuing description.

The invention consists in a wheeled cultivator embodying certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a wheeled cultivator constructed in accordance with the present invention. Fig. 2 is a plan view of the same. Fig. 3 is a detail plan view of one end of the link or rod which connects the trailing wheel with the operating-segment of the plow-gangs, showing the manner of moving the same into and out of engagement. Fig. 4 is an enlarged detail elevation showing the manner in which the shanks or standards of the shovels are ar-

ranged to yield. Fig. 5 is a similar view showing one of the shovels after it has moved backward upon meeting with an obstruction. Fig. 6 is an enlarged detail view of the parts of the joint in the shovel-brace. Fig. 7 is a detail plan view of the front end of one of the plow-beams. Fig. 8 is a longitudinal section through one of the beam-hinges. Fig. 9 is a detail perspective view of one of the operating-segments.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the drawings, 1 designates the frame of the cultivator, which is in the form of a U-shaped yoke, comprising rearwardly-diverging arms 2, connected at their forward ends by a cross-bar or connecting portion 3, to which is pivotally connected an equalizing-bar 4, having at its opposite ends depending members 5, perforated at intervals, as shown, to provide for the hitching thereto of the draft-animals. The rear end of the yoke-frame is supported upon a trailing wheel 6, having a swivel connection therewith, and at a point somewhat in advance of the center of the frame is arranged a main axle 7, which is extended at its ends outside of the frame and has journaled thereon the carrying-wheels 8. On each end of the axle 7 is arranged a collar 9, and from this collar draft-rods 10 extend, one to the lower end of one of the members 5, above referred to, and the other rearward, the latter connecting with the yoke-frame adjacent to the rear end of one of the arms 2 thereof, as shown in Fig. 1.

11 designates a pair of beams each composed of spaced and substantially parallel bars. These beams are arranged one at each side of the machine, and are connected at their rear ends pivotally to the yoke-frame at or near the rear ends of the latter. To the rear end of each arm 2 of the frame is secured a conical shell or bearing-sleeve 12, and to the rear end of each beam 11 is pivotally attached a cone 13. This cone is provided near its top and bottom with enlarged circumferential flanges 14, which contact with the inner surface of the shell 12 and form the bearing-points of the hinge-joint. A threaded bolt 15 is embedded in the upper end of the

cone 13 and extended through the top wall of said shell or bearing-sleeve, where it receives a nut 16, which holds the cone in place and provides for taking up wear. A similar conical shell or bearing-sleeve 17 is arranged at the extreme rear end of one of the arms 2 of the cultivator-frame for receiving a corresponding cone on the upper end of the rearwardly-curving stem or fork 18, in which the trailing wheel 6 is journaled.

The spaced bars which form the beams 11 are deflected and diverged at their forward ends, as shown in Fig. 7, and again bent at suitable points and brought into substantially parallel relation to form bearing-arms 19, to which the standards or shanks 20 of the shovels 21 may be pivotally attached at their upper ends. Additional intermediate arms 22 are interposed between those 19 for affording additional supports for extra shovels, each gang of shovels being shown, for convenience, as composed of four, though more or less may be employed as desired or found necessary. The arms 19 and 22 may be interconnected and stiffened by suitable oblique braces 23.

Each of the shovels 21 is provided with a jointed brace 24, composed of two pieces or sections, one of which attaches pivotally to its respective shank 20 at a point intermediate the ends of the latter, the other piece or section being connected pivotally intermediate its ends to one of the arms 19 or 22, as the case may be. The adjacent ends of said pieces or sections are connected by a hinge or knuckle joint 25, which consists of a pair of disks 26, attached one to each of said sections, and connected by a common pivot 27. These disks are provided with abutting radial ears or shoulders 28, one of which has a threaded opening to receive a set-screw 29, which is intended to regulate the distance between the said ears or shoulders as they approach each other, thus enabling the joint 25 to break with greater or less ease, as may be desired or may be required by the condition of the soil. To the projecting end of the intermediately-pivoted section of the jointed brace is connected one end of a rod 30, the latter passing slidably through an opening in a bracket 31, attached to one of the arms 19 or 22, and having in rear of said bracket a coiled tension-spring 32. A tension-adjusting nut 33 is screwed upon the free end of the rod 30 for tightening or loosening the spring 32. Upon meeting an obstruction any particular shovel is thrust back by reason of the jointed brace being capable of breaking back, but at the same time the breaking of the joint in said brace is resisted by the action of the spring 32. After passing the obstruction the spring 32 acts to throw the pieces or sections of the jointed brace into alinement with each other, thereby restoring the shovel to its normal and operative position. The construction and operation of the mechanism just described is illustrated in detail in Figs. 4 and 5.

34 designates a pair of toothed segments mounted on vertical axes upon the arms 2 of the yoke-frame of the cultivator. One of these segments is provided with a laterally and outwardly extending crank-arm 35, having a terminal wrist-pin 36, by which it is connected to the advance end of a rod or link 37, which extends thence rearward and connects to a crank-arm 38 on the upper extremity of the stem or fork 18, thus providing for the simultaneous turning of said segments and trailing wheels. Other segments 39, arranged between the arms 2 of the cultivator-frame and journaled thereon on horizontal axes, mesh with the segments 34, and said segments are provided with foot-levers 40, which hang pendent and are provided near their bottom ends with stirrups or treadles 41, adapted to receive the feet of the operator and to be vibrated thereby. Each of the segments 34 also has a crank-arm 42, which inclines rearward and downward and has its outer free end turned down and passed through between the spaced bars which form the beam 11.

The free end of the crank-arm 42 carries an antifriction-roller 43, which operates within the beam 11 and reduces the friction between said parts. By rocking the foot-levers 40 the crank-arms 42 will thus be vibrated and a lateral movement of the beams 11 will thus be effected. Simultaneously with such lateral movement of the beams 11 and their gang-shovels it will be seen that through the medium of the link or rod 37 the trailing wheel 6 will be turned. The forward end of the rod or link 37 is longitudinally slotted, as shown at 44, so that it may move longitudinally without actuating its respective segment 34. The slot 44 has a lateral offset 45, into which the wrist-pin 36 may move, and adjacent to said offset the rod or link 37 has a recess or socket for the inner end of a sliding latch-rod 46, mounted in guides or bearings on the crank-arm 35 and capable of being withdrawn by means of a finger-lever 47, fulcrumed on said arm and having pivotal connection with said latch-rod. The latch-rod is pressed into engagement with the link or rod 37 by means of a suitable spring 48. By withdrawing the latch-rod 46 the link or rod 37 may move longitudinally without affecting the segment 34 in the turning of the cultivator, but when the trailing wheel again comes into alinement with the path of movement of the cultivator said latch-rod will automatically spring into engagement with the rod 37, after which any turning of the segment 34 will effect a corresponding turning of the trailing wheel. Provision is also made for elevating and lowering the gang-shovels, and this is done by means of a thumb-latch lever 19, fulcrumed on the frame of the cultivator and engaging with a toothed segment or rack 50, and a chain or other flexible connection 51, attached at one end to said lever and at its lower end to the forward end of

the beam 11. This arrangement may be duplicated on each side of the machine, so that the gang-shovels may be simultaneously or independently raised or lowered to afford the desired penetration.

From the foregoing description it will be seen that the shovels are arranged near the forward end of the cultivator, where they can be seen by the operator, and that they can be adjusted to any desired angle, being capable of being moved either laterally or up and down. The shovels are thus arranged near the point of draft and facilitate the cultivation of the rows of corn, &c., to their extreme end. It will also be seen that the shovels may be adjusted at any time by the operator or automatically by means of the trailing wheel, which acts in the capacity of a rudder. The shovels also, while being held up to their work with any desired pressure, are enabled to yield backward when coming in contact with any immovable object. The cultivator as a whole is light, strong, and durable and will be found thoroughly reliable and efficient in practice.

It will be understood that the several parts of the cultivator are susceptible of changes in the form, proportion, and minor details of construction, which may accordingly be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new is—

1. In a wheeled cultivator, a frame or yoke comprising rearwardly-diverging arms or bars, in combination with a trailing wheel having a swiveled connection with the rear end thereof, swing-beams fulcrumed at their rear ends on said frame, laterally-movable shovels carried by the free ends of said beams, and connections between the beams and trailing wheels whereby the movement of one causes the movement of the other, substantially as described.

2. In a wheeled cultivator, the combination with the cultivator-frame and its carrying-wheels, of a trailing wheel, a laterally-swinging beam fulcrumed on said frame, one or more shovels carried by the free end of said beam, and connections between said beam and trailing wheel, whereby the movement of one effects a corresponding movement of the other, substantially as described.

3. In a wheeled cultivator, the combination with the cultivator-frame and its carrying-wheels, of a gang of shovels located near the forward end of said frame and made laterally movable, a trailing wheel having a swiveled connection with said frame, and connections between said shovels and trailing wheel whereby the lateral movement of the shovels and the swinging of the trailing wheel are simultaneously effected, substantially as described.

4. In a riding implement, the combination with the wheel-frame, and a horizontally-

swinging beam bearing the cultivating devices, of an approximately horizontally-disposed segment mounted on the wheel-frame, a vertically-disposed crank-arm attached to the segment and adapted to engage with the said beam, and an operating-lever having a segment intermeshing with the horizontally-disposed segment, substantially as and for the purpose set forth.

5. In a riding implement, the combination with the wheel-frame, and a horizontally-swinging beam bearing cultivator-shovels, of a segment pivoted to the wheel-frame and normally occupying a horizontal position, a vertically-disposed crank-arm rigidly connected with the horizontal segment and in engagement with the said beam, a pendent foot-lever fulcrumed to the wheel-frame, and a segment formed with the foot-lever and meshing with the horizontal segment, substantially as and for the purpose set forth.

6. In a wheel implement, the combination with the wheel-frame, a horizontally-swinging beam bearing cultivating devices, and a trailing wheel, of a horizontally-disposed arm, a crank-arm connecting the horizontal arm with the said beam, connections between the trailing wheel and the horizontal arm, and means for actuating the said horizontal arm, whereby the beam and trailing wheel are simultaneously moved, substantially as and for the purpose set forth.

7. In a wheel implement, the combination with the wheel-frame, a trailing wheel, and a horizontally-swinging beam bearing cultivating devices, of a horizontal arm, a crank-arm connecting the beam with the horizontal arm, a rod operatively connected at one end with the trailing wheel, and means for detachably and automatically connecting the opposite end of the said rod with the aforesaid horizontal arm, whereby the latter may have a limited independent movement without affecting the position of the trailing wheel and will automatically engage with the rod at a predetermined stage of movement so as to cause the trailing wheel and beam to move together, substantially as set forth.

8. In a wheel implement, the combination with the wheel-frame, a trailing wheel, and a horizontally-swinging beam bearing cultivating devices, of a horizontal arm, a crank-arm connecting the horizontal arm with the beam, a rod having connection at one end with the trailing wheel, a latch carried by the horizontal arm to connect it with the said rod, and means for operating the horizontal arm whereby the beam and the trailing wheel are moved simultaneously, substantially as set forth.

9. In a wheel implement, the combination with the wheel-frame, a trailing wheel, and a horizontally-swinging beam bearing cultivating devices, of a horizontally-disposed arm, means for actuating the said arm, a crank-arm between the beam and horizontal arm, a rod operatively connected with the trailing wheel and having a longitudinal slot formed

with an offset, a wrist-pin provided on the horizontal arm and operating in the slot of the said rod, and a hand-operated latch mounted upon the said horizontal arm and adapted to engage with the slotted portion of the rod, substantially as and for the purpose set forth.

10. In a wheeled cultivator, the combination with the cultivator-frame, and a beam connected thereto, of a shovel having its shank or standard connected pivotally to said beam, a jointed brace interposed between said shovel and beam, abutting ears or shoulders located adjacent to the joint in said brace, and a set-screw passing through one of said ears and bearing against the opposing ear, substantially as and for the purpose described.

11. In combination, a wheel-frame, a conical shell or bearing-sleeve secured thereto and closed at its upper end, a swing-beam bearing one or more shovels, means for swinging the said beam, a pivoting-cone attached to the said beam and having upper and lower bearing-flanges snugly fitting within the conical shell, and having a space between the said flanges, a threaded stem projecting from the upper end of the bearing-cone and passing through the closed end of the conical shell, and an adjusting-nut for connecting the cone and shell and taking up wear, substantially as set forth.

12. In a wheeled cultivator, the combination with the cultivator-frame, of a laterally-swinging beam carrying one or more shovels, an operating-segment provided with a crank for moving said beam and also having a laterally-projecting arm, a trailing wheel having a swiveled connection with the cultivator-frame, a crank-arm on the stem or fork of said wheel, and a link or rod interposed between the said arm of the trailing wheel and the arm of the operating-segment, substantially as described.

13. In a wheeled cultivator, the combination with the cultivator-frame, of a laterally-swinging beam carrying one or more shovels, an operating-segment provided with a crank for moving said beam and also having a laterally-projecting arm, a trailing wheel having a swiveled connection with the cultivator-frame, a crank-arm on the stem or fork of said wheel, a rod or link interposed between said arm on the trailing wheel and the arm of the operating-segment and having its advance end longitudinally slotted to embrace the wrist-pin of said last-named arm, a spring-latch on said arm for engaging and holding said rod or link stationary, and means for

withdrawing said latch-rod from engagement, substantially as and for the purpose described.

14. In combination, a beam, a standard pivotally connected to the beam, a jointed brace having pivotal connection with the beam and standard, and a set-screw carried by one section of the jointed brace and adapted to engage directly with the other section of the jointed brace, substantially as and for the purpose set forth.

15. In combination, a beam, a standard bearing a shovel and having pivotal connection with the beam, a jointed brace having pivotal connection with the standard and beam, a rod having pivotal connection with a section of the jointed brace and operating through a guide attached to the beam, and a tension-spring mounted upon the said rod and confined between a stop thereon and the guide through which the rod operates, substantially as and for the purpose set forth.

16. In combination, a beam, a standard bearing a shovel and having pivotal connection with the beam, a jointed brace having pivotal connection with the standard and beam, a bracket carried by the beam, a rod slidingly mounted in the bracket and having pivotal connection with a section of the jointed brace, an adjusting-nut mounted upon the rod, and a tension-spring placed upon the rod and confined between the bracket and tension-nut, substantially as set forth.

17. In combination, a beam, a standard bearing a shovel and having pivotal connection with the beam, a jointed brace having pivotal connection with the standard and beam and provided with offstanding portions adjacent to the pivotal joint between them, a set-screw carried by one offstanding portion and adapted to engage with the other offstanding portion, a bracket attached to the beam, a rod slidingly mounted in the bracket and having pivotal connection with the upper section of the jointed brace, an adjusting-nut placed upon the rod, and a tension-spring mounted upon the said rod and confined between the bracket and tension-nut, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HERSCHEL G. THOMPSON.

Witnesses:

J. H. MARSHALL,
MILO F. OLIVER.