H. S. MEAD.
Cultivator.

No. 216,283. Patented June 10, 1879.

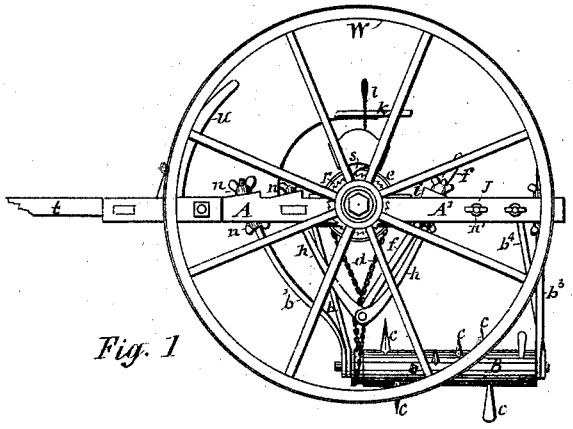

Fig. 1

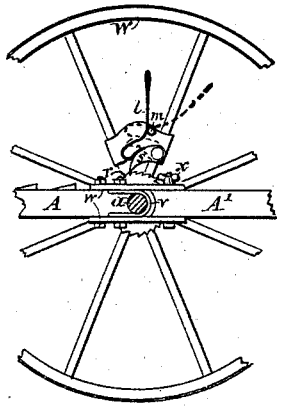

Fig. 4

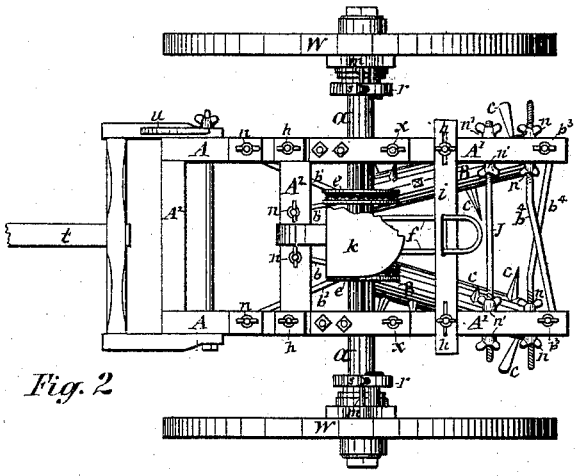

Fig. 2

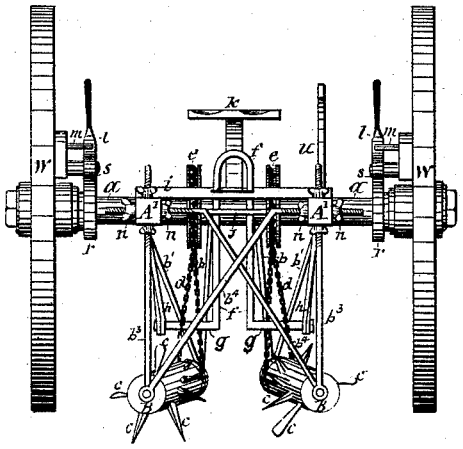

Fig. 3

WITNESSES:
A. Wood
C. Bendixen.

INVENTOR:
Hiram S. Mead
per E. Laass, his Atty.

UNITED STATES PATENT OFFICE.

HURAM S. MEAD, OF GLOVERSVILLE, NEW YORK.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **216,283**, dated June 10, 1879; application filed April 14, 1879.

To all whom it may concern:

Be it known that I, HURAM S. MEAD, of Gloversville, in the county of Fulton, in the State of New York, have invented new and useful Improvements in Cultivators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to machines designed for cultivating and hoeing the soil, and has reference more particularly to that machine for which I have obtained Letters Patent of the United States No. 48,575.

The object of this invention is to adapt the machine for operation by horse-power, and to render the same more convenient and efficient generally; and it consists, first, in a novel combination of the forward and rear sections of the frame or body of the machine with the axle of the traction-wheels and the supports of the rotary hoeing or harrowing shafts, whereby their angle of divergence can be varied to conform their range of action to the breadth of land to be operated on at the sides of a row; and, second, in novel, simple, and effective devices for adjusting the tension of the driving chains or belts, all as hereinafter more fully described.

The invention is fully illustrated in the accompanying drawings, wherein Figure 1 is a side view, Fig. 2 a plan view, and Fig. 3 a rear-end view, of my improved machine; and Fig. 4 is a sectional view illustrating the construction of the frame of the machine, and the clutch by means of which the machine is thrown in and out of gear.

Similar letters of reference indicate corresponding parts.

W W are two traction-wheels mounted loosely on their axle *a*, to which latter is also loosely connected the frame or body of the machine. The said frame is constructed in two sections, jointed at the axle. The forward section consists of two side stringers, A A, rigidly united by cross-beams A^2, and is loosely connected to the axle *a* by a U-shaped band, *v*, secured to the rear end of said stringers, and embracing the axle *a*, as shown in Fig. 4 of the drawings, thereby relieving the rear section of all the strain incident to the traction of the machine.

The rear section of the frame consists of two side stringers, A^1 A^1, which are coupled to the forward stringers, A, by means of straps or plates *w*, secured to the top and bottom of the latter, and a detachable bolt, *x*, passing through the rear ends of said plates and forward end of stringer A^1. Between the forward end of the stringer A^1 and the axle is a space to allow the rear end of said stringers to be moved laterally, and thus the distance between them distended or contracted, as may be desired. The angle of their divergence is adjusted by means of a rod, *j*, extended across the rear end of the frame, and provided at opposite sides of the respective stringers A^1 A^1 with an adjusting-nut, *n'*.

Beneath the body of the machine are suspended two shafts or rolls, B B, which are arranged divergingly from the line of draft rearward, and have radiating from them a series of prongs or teeth, *c*, which may either be in the form of harrow-teeth or present a flat surface to act analogous to spades or shovels, or may be partly of each said construction, according to the requirements of the nature of the soil and the work to be accomplished.

The forward ends of the aforesaid shafts are pivoted to and supported on the ends of rods *b* b^1, pendent respectively from the stringer A and cross-piece A^1 of the body of the machine, at such relative positions as to brace the shaft B both laterally and longitudinally. To admit of regulating the operation of the machine with reference to the depth of penetration of the soil by the teeth *c*, the rods *b* b^1 are adjustably connected with the frame of the machine by nuts *n n* on said rods working against opposite sides of said frame.

The rear end of the shaft B is supported and journaled in the ends of two rods, b^3 and b^4, one of which is pendent from the stringer A^1 of the corresponding side of the machine, and the other is extended to the stringer at the opposite side, and adjustably connected therewith by nuts *n* at opposite sides of the stringer, and forms a lateral brace to the rear end of the shaft. The rear ends of the stringers being adjustable in their distance from each other by the rod *j*, before described, affords a corresponding adjustability to the rear ends of the shafts B, and thus admits of varying the angle of their divergence to conform their range

of action to the breadth between rows, or to suit the soil or plants to be operated on.

The shafts B are rotated by means of cross belts or chains *d*, extended around the forward end thereof and around pulleys *e*, connected with the axle *a*. To compensate for the slack of said chains, which may be occasioned by the change of the angle of divergence of the shafts, or by other means, a bar, *f*, is bent at its center so as to bring its two halves parallel to each other, and the ends are bent at right angles in opposite directions to form two arms, *g*, which are extended, respectively, across the two chains beneath their point of crossing, and are supported at their extremities by rods *h h*, pendent from the frame A, to which the said rods are adjustably connected by nuts acting against opposite sides of said frame. The central or main part of the bar *f* passes through a slot in a cross-piece, *i*, secured to the top of the frame A^1, and forms a handle to facilitate the adjustment of the tension of the chains, which is accomplished by raising or lowering the arms *g*, principally by the nuts on the supporting-rods *h h*.

The motion of the traction-wheels is transmitted to the axle by a clutch, consisting of a ratchet, *r*, on the axle, and a dog, *s*, pivoted to the wheel. The dog is provided with a spring-lever, *l*, by which it is thrown in and out of gear, and which is bent in such a form that when the clutch is thrown in gear a stationary pin, *m*, on the wheel will bear against the rear of said lever and maintain the dog engaged with the ratchet, and when thrown out of gear the lever *l* will be supported on said pin, as shown in Fig. 4 of the drawings. The seat *k* for the driver being arranged over the axle renders the levers *l* easy of access.

t represents the tongue to which the horses are connected, and only partly shown in the drawings. Its hounds or coupling-arms are pivoted to the outside of the stringer A of the machine by a transverse rod extended through said stringers. To the tongue or its coupling-arm is attached a rigid rearwardly-projecting lever, *u*, by a rearward pressure of which and a forward thrust of the weight of the driver upon the front end of the machine the machine can be tilted, and thus the harrowing or hoeing shafts B raised off the ground when encountering obstructions in the passage of the machine, or when turning the machine around.

Having thus described my improvements, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the suspended shafts B, the forward frame, A, connected to the axle *a* by the U-shaped band *v*, the rear stringers, A^1 A^1, adjustably connected to the forward frame, with a space between their forward ends and axle *a* and the tie-rod *j*, and lateral suspension-rods b^4, provided, respectively, with the adjusting-nuts *n' n* at opposite sides of the respective stringers, all constructed and combined substantially as described and shown, for the purpose set forth.

2. In combination with the cross-chains *d*, the bar *f*, bent as described, and having its ends formed into right-angled arms *g*, extended between the chains beneath their point of crossing, the rods *h h*, supporting the ends of arms *g*, and connected with the frame by nuts at opposite sides of said frame, and the cross-piece *i*, having a slot for the support of bar *f*, all constructed and arranged to operate substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name and affixed my seal in the presence of two attesting witnesses, at Gloversville, in the county of Fulton and State of New York, this 29th day of March, 1879.

HURAM S. MEAD. [L. S.]

Witnesses:
E. VAN SLYKE,
CHAS. H. WICKHAM.