C. HARDGRAVE.
Cultivator.

No. 218,527. Patented Aug. 12, 1879.

Fig. 1.

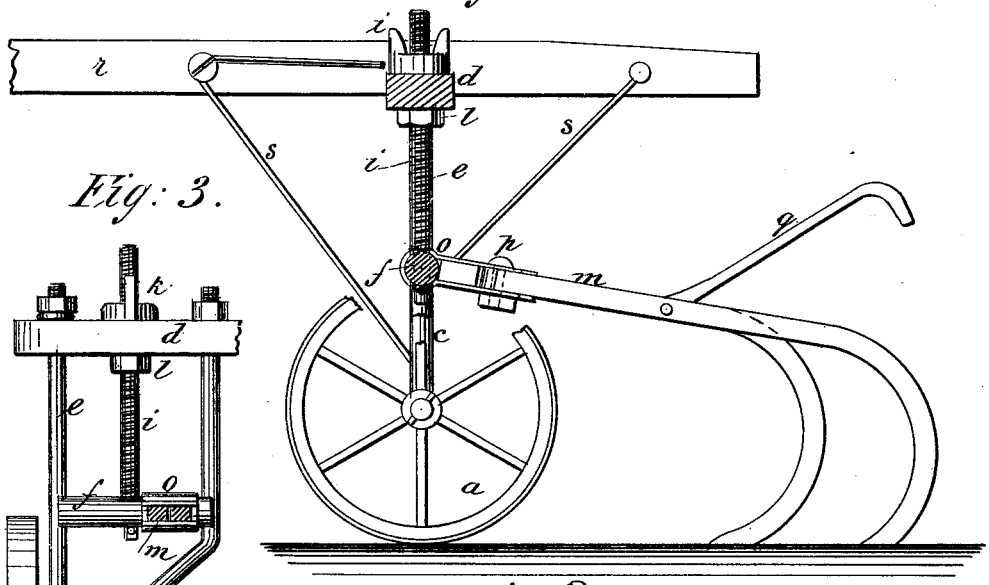
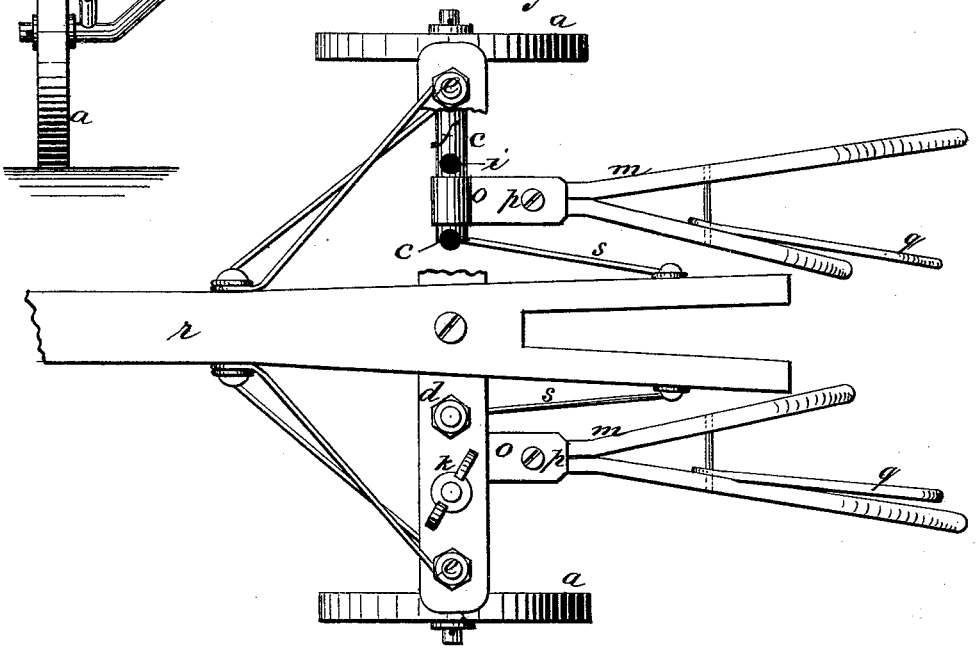


Fig. 3.

Fig. 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

CAGER HARDGRAVE, OF CLARKSVILLE, ARKANSAS.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **218,527**, dated August 12, 1879; application filed December 26, 1878.

To all whom it may concern:

Be it known that I, CAGER HARDGRAVE, of Clarksville, in the county of Johnson and State of Arkansas, have invented a new and useful Improvement in Cultivators, of which the following is a specification.

The object of my invention is to construct a cultivator so that the plow-beams may be adjusted vertically for deep or shallow cultivation, and so that the wheels of the apparatus will not interfere with the beams in turning at the end of a row.

In the accompanying drawings, Figure 1 is a sectional side elevation of my improved cultivator. Fig. 2 is a plan view, partially in section. Fig. 3 is an elevation of the parts at one side of the machine, looking from behind, and the beam in section.

Similar letters of reference indicate corresponding parts.

I make use of wheels *a*, that are of small diameter, the wheels being upon bent axles *c*. Each axle *c* is bent upward next to each wheel, forming a vertical portion that extends to a cross-piece, *d*, which piece *d* may be a portion of the axle, or a separate piece to which the separate axles are connected rigidly, as shown. A vertical rod, *e*, is connected at each side near the outer ends of the axles, and extends to the cross-piece *d*, where the rods *e* are firmly secured.

The rods *e* at each side and the vertical part of each axle *c* form guides for a cross-bar, *f*, which has slotted ends that set upon the parts *c* and *e*, so that it can be moved up or down. Each cross-bar *f* is moved by means of a screw, *i*, attached to said bar *f*, and extending through cross-piece *d*, at the upper side of which is a thumb-screw, *k*, or a nut and crank. A set-nut, *l*, beneath piece *d* may be used to clamp the parts after they are adjusted.

The beams *m* of the plows, of usual character, are attached to cross-bars *f* by means of clevises *o*, that are fitted to swing vertically on bars *f*, and the pins or bolts *p*, that connect the beams *m* and clevises *o*, permit transverse swinging movement of the plows.

q q are handles attached to the plow-beams. *r* is the pole connected with cross-piece *d*, and *s s* are braces extending from the pole to axle and rods *e*.

The construction described permits vertical adjustment of the forward ends of the plow-beams to cause the plows to run more or less deep. In turning the apparatus at the end of the field, the plows need not be lifted, as the wheels will run under the beams without interfering with them.

I am aware that the forward ends of the plow-beams have been swiveled to nuts working on crank-screws; and I am also aware that the beams have been secured to bars which slide on short or bent axles, the said bars being operated by suitable levers for raising or lowering the forward ends of the beams; but

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

The combination, in a cultivator, of the bent axles *c*, the rods *e*, the sliding bars *f*, and the screws *i*, provided with the nuts *k l*, with the cross-bar *d* and the plow-beams *m*, substantially as and for the purpose described.

CAGER HARDGRAVE.

Witnesses:
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