W. A. KNOWLTON.

Cultivator.

No. 211,098. Patented Jan. 7, 1879.

Fig. 1.

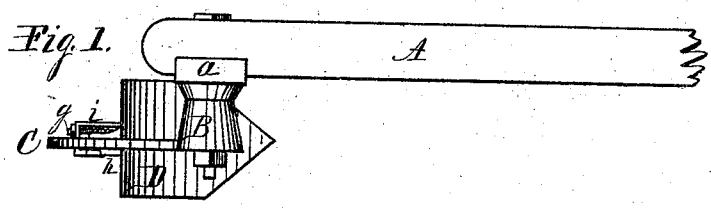


Fig. 2.

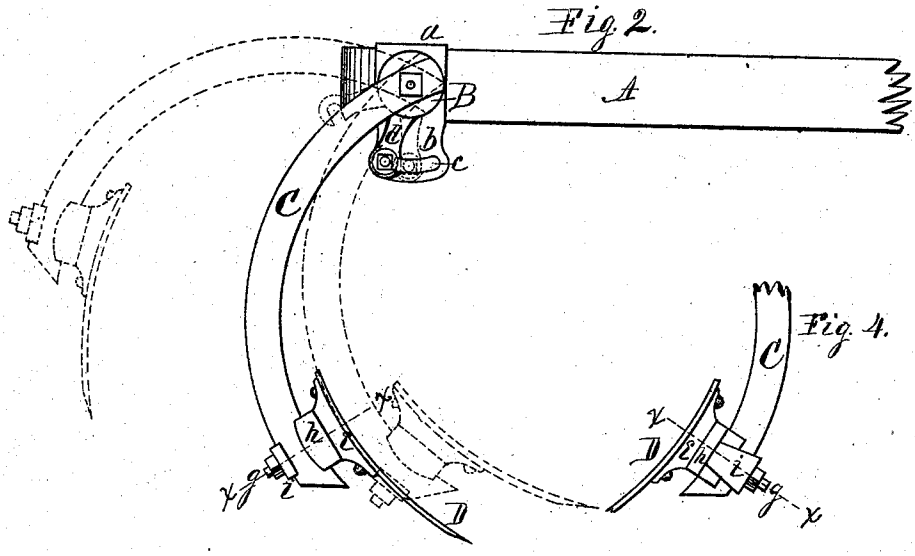


Fig. 4.

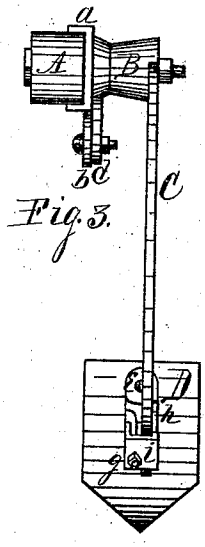
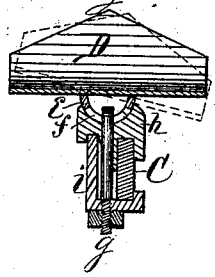


Fig. 3.

Fig. 6.



Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM A. KNOWLTON, OF ROCKFORD, ILLINOIS.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **211,098**, dated January 7, 1879; application filed July 1, 1878.

To all whom it may concern:

Be it known that I, WILLIAM A. KNOWLTON, of the city of Rockford, in the county of Winnebago, and State of Illinois, have invented a new and useful Improvement in Cultivators, of which the following is a specification:

This invention relates to the manner and the means employed in connecting the shovel to the shovel-standard of a cultivator, and to the manner and means employed in connecting the shovel-standards to the drag-bars.

The object of my invention is, first, to secure the shovel to the standard by cheap and reliable means, by which the shovel may be adjusted vertically on the standard, and turned thereon to throw the earth to either side; and, second, to secure the shovel-standard to the drag-bar by cheap and reliable means, by which the shovel may be changed to enter the ground at a greater or less angle relatively with the surface, and that under a severe strain will render and permit the standard to turn backward to pass obstructions without injury to the shovel, and in which the slip device is constructed wholly of iron, which will not be affected by the changes of the weather, as when wood and iron are used.

To this end I have designed and constructed the devices represented in the accompanying drawings, in which—

Figure 1 is a plan view embodying my invention, of which Fig. 2 is a side elevation, and Fig. 3 is a rear elevation. Fig. 4 shows the opposite side of the shovel-fastening from that shown in the elevation at Fig. 2. Fig. 5 is a transverse section on dotted line *x;* and Fig. 6 represents the bolt, having elongated head, which connects the shovel to the standard.

In the drawings, A represents the rear portion of a drag-bar of a cultivator, substantially the same as now in common use. *a* is a plate-bracket, having flanges to embrace the upper and lower edges of the drag-bar, and is formed with a depending arm, *b*, having its lower end provided with a curved slot, as at *c*. B represents a stud, grooved on its outer end to receive the standard C, which, with the stud B, is pivoted to the drag-bar on the face of the bracket-plate *a* by a suitable screw-bolt, which is passed through the standard, stud, bracket-plate, and drag-bar, and serves to connect the standard to the drag-bar in such a manner as to permit it to swing on its pivotal connection. The inner end of the stud B is provided with a depending arm, *d*, having its lower end slotted to coincide with the slot in the depending arm of the bracket-plate. This slot in the arm *d* is open on its forward side. A suitable clamping-bolt is passed through these slots, and is provided with a screw-nut, by which, when the standard is adjusted to a proper working angle, the pendent arms are clamped to each other with a force sufficient to hold them for the purposes of cultivation, but in such a manner that when the shovel meets with an obstruction offering a resistance that would otherwise break or injure the parts the open slotted arm will slide from under the clamping-bolt and permit the shovel to turn back to pass the obstruction without injury, after which it can be returned to its working position and again clamped.

D represents a shovel of the usual form, prepared from plate-steel in the usual manner, and is provided with the well-known hollow back, (shown at *e*,) slotted crosswise, as seen at *f*, through which the bolt *g* projects, which connects it to the standard. These parts are substantially the same as similar parts employed for the same purpose and now in common use. *h* represents a clamping-block, having concave front side, adapted to receive the convex outer surface of the shovel-back, and is pierced centrally to receive the clamping-bolt *g*.

The rear face of the block *h* is grooved on one side of the bolt to receive the front edge of the shovel-standard, and on the opposite side of the bolt to receive the forward edge of the clamping-block *i*, the rear portion of which is of hook form to embrace the rear face of the standard, and is also pierced to receive the clamping-bolt *g*. These parts in place as represented, the shovel is firmly clamped to the standard by means of the screw-nut on the outer end of the clamping-bolt.

By slackening the screw-bolt the shovel may be turned to any angle to either side within the limits of the device, and may be adjusted up or down on the standard to regulate its working depth, and when so adjusted

can be fixed in position by tightening the screw-nut.

In the use of my improved shovel-holder, the vertical center of the shovel is on one side of the shovel-standard, in line with the lengthwise center of the clamping-bolt *g*. By inverting the clamping-blocks *h* and *i* the position of the shovel and the clamping-bolt *g* will be changed to the opposite side of the standard. By this means I am enabled to change the relative position of the shovels on the same drag-bar to cause them to track closer to or farther from each other to vary the cultivation to meet the requirements of the user.

The vertical center of the shovel being placed on one side of the standard permits the greatest quantity of earth thrown by the shovel to pass the standard on one side, which will carry with it stalks or other obstructions adhering to the standard to prevent clogging.

I claim as my invention—

1. The combination, with a bracket-plate provided with flanges to embrace the drag-bar, and a depending flange having an arc-shaped slot formed therein for adjusting the standard, of a stud grooved to receive the shovel-standard, and provided with a depending arm, which latter is provided with an open slot and an adjusting-bolt that extends through the arc-shaped slot in the depending flange of the bracket, substantially as set forth.

2. The combination, with the curved shovel-back, of a clamping-block constructed to fit against the curved back and embrace one edge of the standard of a second clamping-block, constructed to overlap the opposite edge of the standard, and an adjusting and fastening bolt, substantially as set forth.

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Witnesses:

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