

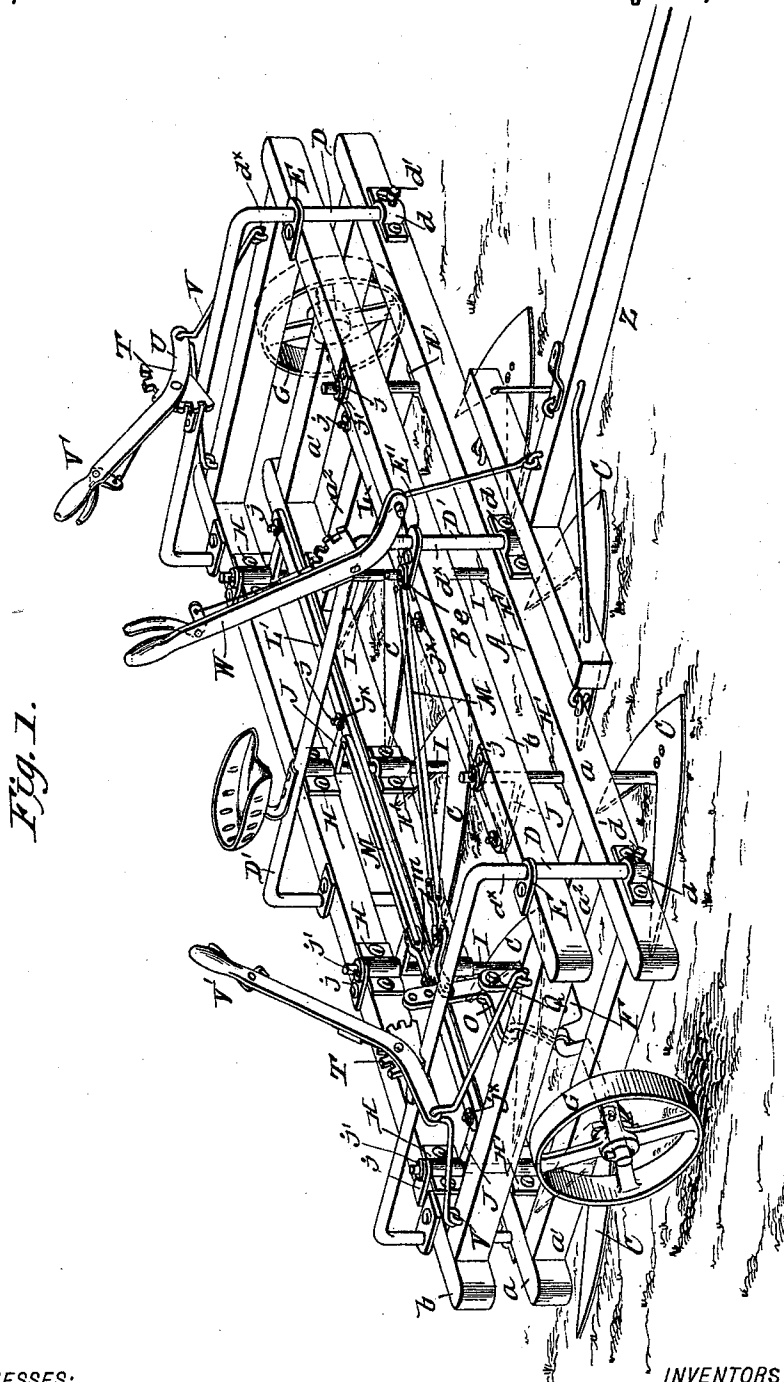
(No Model.)

2 Sheets—Sheet 1.

C. H. HARMON & D. & A. McRAE.
CULTIVATOR.

No. 497,658.

Patented May 16, 1893.



WITNESSES:

Fred G. Dietrich

M. D. Blondel.

INVENTORS:

Charles H. Harmon.
Donald McRae.
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ATTORNEYS.

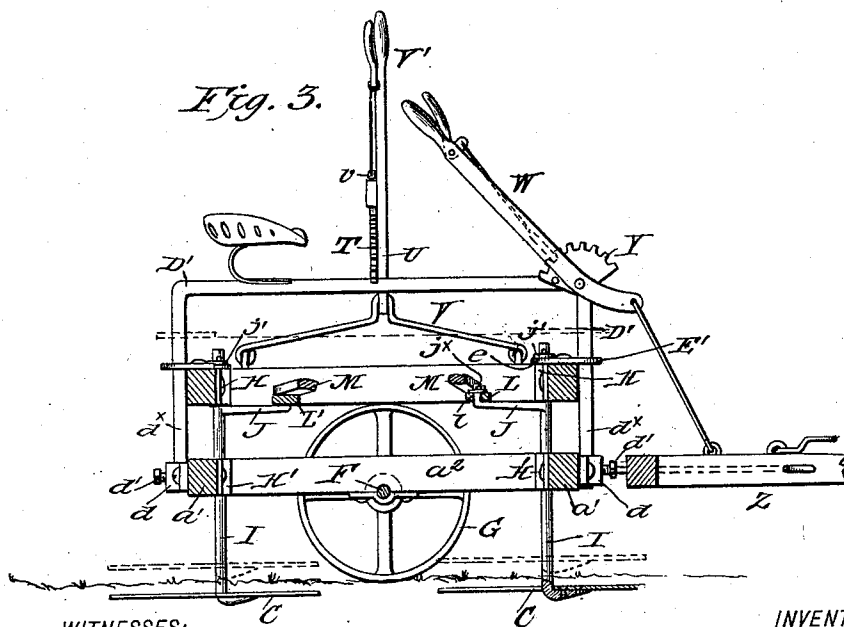
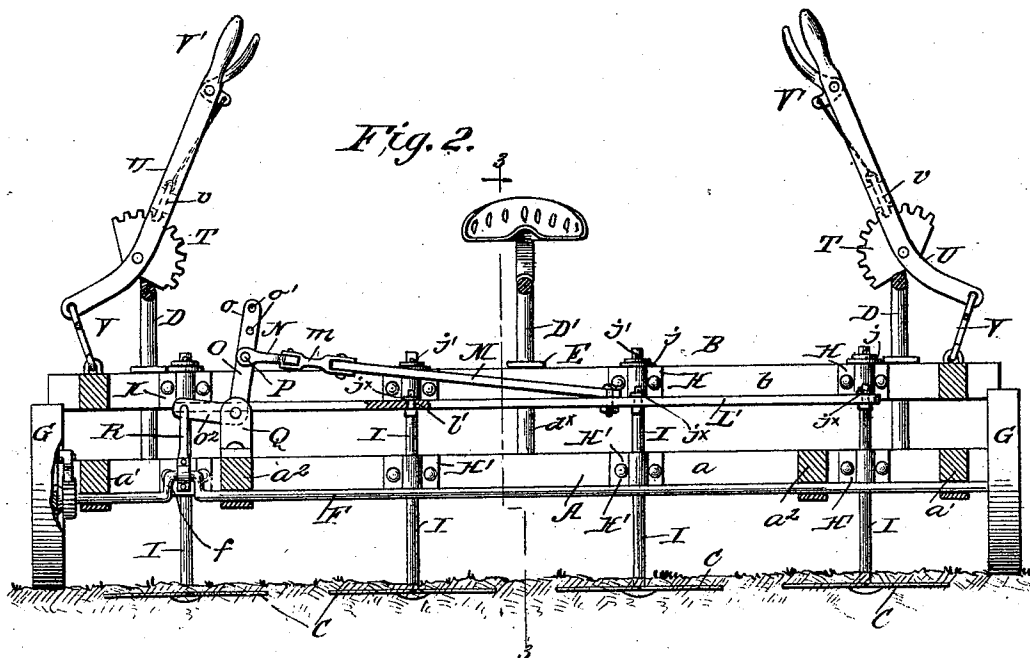
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W. D. Bloudek

INVENTORS:
Charles H. Harmon.
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UNITED STATES PATENT OFFICE.

CHARLES H. HARMON, DONALD McRAE, AND ALEXANDER McRAE, OF
MILTON, OREGON.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 497,658, dated May 16, 1893.

Application filed January 3, 1893. Serial No. 457,052. (No model.)

To all whom it may concern:

Be it known that we, CHARLES H. HARMON, DONALD McRAE, and ALEXANDER McRAE, residing at Milton, in the county of Umatilla and State of Oregon, have invented certain new and useful Improvements in Cultivators, of which the following is a specification.

Our invention relates to that class of cultivators designed to cultivate summer fallow ground, and at the same time destroy the weeds by cutting them off below the surface, and turning the roots up to the sun, whence they soon wither and die.

Our invention has for its object to provide a cultivator of this class of light weight, yet strongly built, that will work in all kinds of soil under any condition, which will destroy all weeds of any kind that come before it, and in which the shovels, will clear themselves of all trash that may accumulate upon them, as they serve to stir up the ground.

With other minor objects in view all of which will hereinafter appear, our invention consists in the peculiar combination and novel arrangement of parts all of which will hereinafter be fully described and particularly pointed out in the specification and claims reference being had to the accompanying drawings in which—

Figure 1 is a perspective view of our improved cultivator. Fig. 2 is a vertical transverse section thereof, and Fig. 3 is a transverse section on the line 3—3 on Fig. 2.

Our improved cultivator in its main construction comprises two rectangular frames A and B, the lower one A of which forms the main or bearing frame while the upper is vertically movable over the lower frame, and to which the shovels C are connected, which shovels are adjusted vertically by the movement of such upper frame. This upper frame is guided and braced by three arched bars, formed preferably of gas pipe, the outer ones D D of which are disposed near the outer edges of the frames A and B, while the other D' is arranged centrally thereof. The lower ends of the bars D D D' are adjustably held in socket plates d d secured on the outer faces of the longitudinal beams a of the frame A, such ends being held by set screws d' d' as shown. The vertical members d^x of the

arched bars are also guided in apertured plates E E' secured to the upper face of the beams b of the frame B, the central one E' on the front beam b, being also formed with a rearwardly projecting apertured ear e for a purpose presently explained.

F indicates the axle journaled on the end beams a' and the intermediate cross beams a², and G the drive wheels, which are loosely journaled on the outer ends of such axle; and in practice the usual ratchet and pawl mechanism on both hubs, is employed to admit of the machine turning either way.

H indicates a series of bracket plates, secured on the inner faces of the bars b of the frame B, and in such brackets are held to rock vertical shafts or standards I, which have inwardly extending horizontal crank arms J, projected from such shafts at a point just below the brackets H. The upper ends of all the standards I except the front central one project up through apertured bracket plates j on the upper face of the beams b, the central one passing through the apertured bracket E' as shown, and all of such ends are held to their adjusted positions by wedges or keys j'. These standards are also passed through a series of brackets H' on the beams a of frame A, and to their lower ends are secured the shovel blades C, which are preferably heart shaped as shown.

It will be noticed by reference to the drawings, that but three shovels are used at the front, while four are used at the rear, and that such shovels are arranged to project forward with the points of the rear shovels intermediate the heels of the front shovels, whereby the more effectively to stir up the soil and cut the weeds, as will presently be more fully stated. These shovels are secured to the lower ends of the standards in any suitable manner, but preferably as shown in the drawings, the fastening bolts having countersunk heads so as to present a smooth surface.

L L' indicate a pair of sweeps or connecting bars, which have at regular intervals apertures l l' to receive the upturned ends j of the crank arms J, such ends being held by the washers and keys j^x as shown.

To the sweeps L L' are connected pitman bars M, the front ends of which have each a

metallic strap *m*, which secures them to the ends of a clevis member *N*, which is detachably connected to the long arm *o* of a bell crank lever *O*, by a removable pin *P* which passes through one of a series of apertures *o'* in said arm *o*.

The bell crank lever *O* is pivoted in a bracket *Q* secured upon one of the cross bars *a*² of the lower frame, and its short arm *o*² is connected by a pitman *R*, (which is preferably formed of sections as shown,) with a crank portion *f* formed on the drive axle as most clearly shown in Fig. 2 of the drawings.

By connecting the shovel connecting sweeps with the drive axle in the manner stated, it will be seen that as the machine is driven over the field, a reciprocating motion in reverse directions, will be imparted to such sweeps *L L'*, and owing to the manner in which the crank arms *J* are connected therewith, a rocking motion will be imparted to the standards *I*, and the shovels turned back and forth, and as the sweeps move in opposite directions it is manifest that the front and rear set of shovels will also move in reverse directions. This prevents any jar on the machine and keeps the same steady.

To provide for a vertical adjustment of the shovels, whereby to regulate their cutting depth and also to lift them entirely out of operative position, we arrange the upper frame for vertical movement on the arched bars *D, D'* and on such bars are secured segmental racks *T*, to which are pivoted lifting levers *U*, the lower ends of which are connected to lifting bails *V*, while their handle portions *V'* are extended inward toward the driver's seat so as to be in convenient reach of the driver, such levers having the usual detents *v* which engage the racks *T* as shown.

By arranging the upper frame as described, simple and effective means are provided for regulating the depth of the shovels, and also for holding them up (see dotted lines Fig. 3) out of operative position.

W indicates a tilting lever pivoted to a rack portion *Y*, formed on the front end of center arch bar, which has its handle portion projected rearward toward the driver's seat, while its front end is connected with the tongue *Z*, such tilting lever serving to regulate the machine, so as to run level on all kinds of ground, and at any depth, and to regulate the weight on the horses' necks, by means of the driver's weight, the seat has a movable slide portion as shown.

From the foregoing description taken in connection with the drawings, it will be seen that as the shovels are lowered into the soil, their rotary or sidewise movement will cut off the weeds at a point below the surface, the extent of such rotary motion being governed by the adjustment of the connecting pin in the apertures of the arm *o* of the bell crank lever *O*.

The shovels will clear themselves as they

reciprocate sidewise, they first presenting a cutting surface to the ground and then releasing, such motion also stirring up the soil.

By connecting the sweeps to the bell crank lever *O* in the manner stated and shown, such sweeps are capable of free movement with the upper frame, they having as it were a pivotal connection with the said lever *O*.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a cultivator, in combination, the main frame, the drive axle, the shovels and intermediate connections between such axle and the shovel standards, substantially as described, whereby a rocking motion will be imparted to the shovel standards, to move the shovels laterally as and for the purposes described.

2. In a cultivator, the combination with the main frame, and the supporting wheels and revolving axle, of horizontally disposed shovels, having vertical standards supported on the frame, said standards held for vertical and rocking movement in their bearings, and intermediate devices operated by the revolving axle adapted to impart a rocking motion to the shovel standards, all substantially as and for the purposes described.

3. The combination, in a cultivator, with the rectangular main frame, the drive wheels and the revolving shaft, of a series of standards journaled on the front and rear beams of the frame, said standards having horizontally arranged shovel blades, and intermediate connections between such standards and the axle arranged substantially as shown, whereby a rocking motion is imparted to the front and rear series of such standards in reverse directions, all substantially as and for the purposes described.

4. As an improvement in cultivators, the combination of the frame *A*, and the revolving axle journaled thereon, the drive wheels, with the frame *B* connected to the frame *A*, and vertically movable thereon, a series of shovel carrying standards secured to such frame *B*, and projected below the frame *A*, and lever and rack mechanism for adjusting such frame *B* vertically substantially as and for the purpose described.

5. The combination with the main frame *A*, the arched bars *D D'* projected up therefrom and having segmental racks, of the shovel carrying frame *B*, guided on such bars *D*, and lever and pawl devices pivoted to such racks and connected to the frame *B*, substantially as shown and described.

6. The combination with the frame and the revolving axle, of a series of horizontally disposed shovels, having vertical standards or shafts, journaled on the frame, for a rocking motion, said shafts having crank members, sweeps connecting such cranks, and intermediate connections between such sweeps and the axle, whereby a reciprocating motion

is imparted to such cranks by the rotary motion of the axle, substantially as and for the purposes described.

7. The combination with the main frame A, the drive wheels and axle, mounted thereon, said axle having a crank portion, and a bell crank lever pivoted on the main frame, and connected with the crank of the axle, and rocked thereby, of the frame B held for vertical movement on the frame A, the shovels having vertical standards held for a rocking motion on the frame B, said standards hav-

ing inwardly projecting cranks, sweeps connecting such cranks, pitman rods connected to the sweeps, and detachably connected to the free end of the bell crank lever, all substantially as and for the purposes described.

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