V. P. HARRIS.

CULTIVATOR.

No. 108,260. Patented Oct. 11, 1870.

Fig: 1

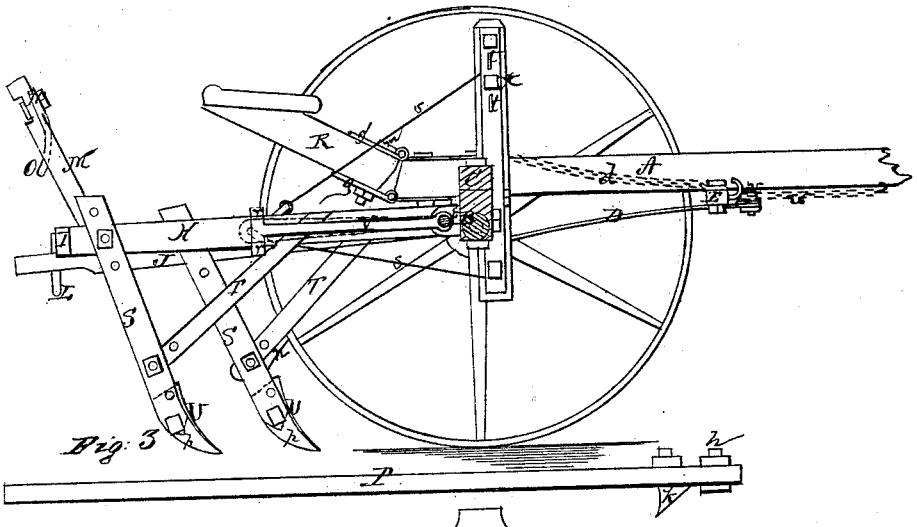


Fig: 3

Fig: 2

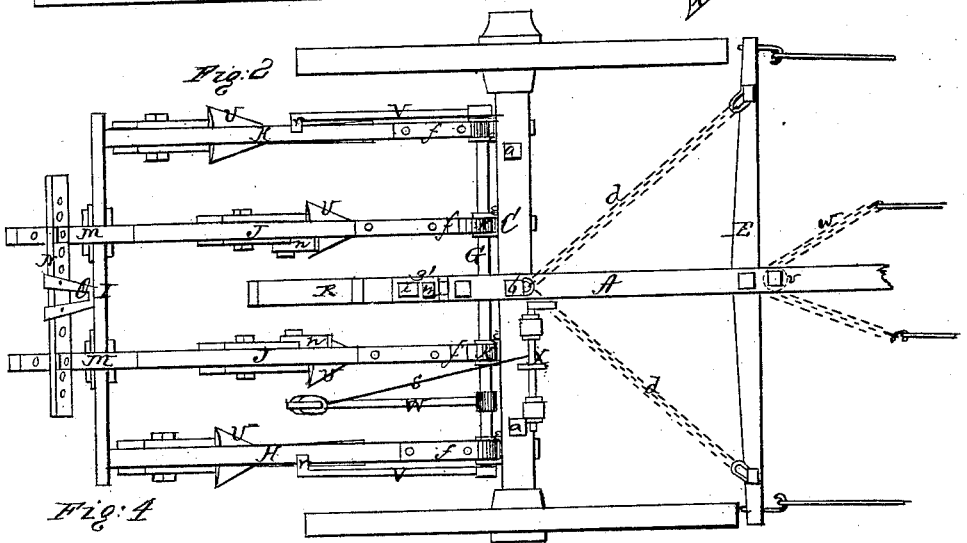


Fig: 4

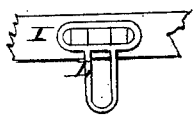


Fig: 5

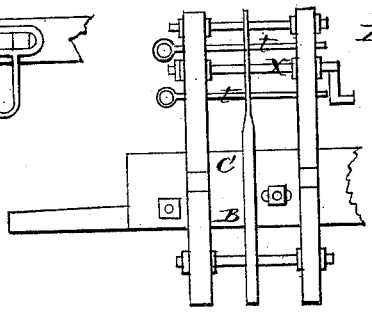
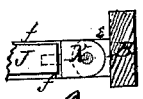


Fig: 6



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UNITED STATES PATENT OFFICE.

VENENDO P. HARRIS, OF GREENSBURG, INDIANA.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **108,260,** dated October 11, 1870.

To all whom it may concern:

Be it known that I, VENENDO P. HARRIS, of Greensburg, in the county of Decatur, and in the State of Indiana, have invented certain new and useful Improvements in Cultivators; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a cultivator, as will be hereinafter fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation of my machine, one wheel being removed; and Fig. 2 is a plan view of the same. Figs. 3, 4, 5, and 6 are detached views of parts difficult to show in Figs. 1 and 2.

A represents the draft-pole, which is fastened to the axle B by a single cross-beam, C, which is mortised or halved in the center, so as to hold the draft-pole in a straight line, and is bolted to the axle at each end by bolts *a a*, and at the center by bolt *b*, which passes through the draft-pole, cross-beam, and axle, and extends below the axle, to admit and fasten the iron brace D. This brace runs at straight lines with the draft-pole A, and between said brace and draft-pole the equalizer E is pivoted. *d d* are stay-chains running from near the ends of the equalizer E to the center-bolt *b*. By these chains being fastened at *b*, should one horse spring forward so as to tighten the same, the tendency would be to move the cultivator on in a straight line. The axle B is an ordinary axle, to which any style or size of wheel may be attached at a proper distance apart, being governed by the nature of the article to be cultivated. On the rear side of the axle B are fastened four keys, *e e*, by means of a single bolt in each one, which passes through the center of the key and through the axle. Through said keys are made holes sufficiently large to pass the draft and raising rod G, as shown in Fig. 2. H H are side beams of the cultivator, and are fastened to rear cross-beam I by joint-bolts or mortises, and to rod G by a hole in the front end, through which the same passes, resting between the flanges of the keys *e e*, the ends of said side beams being protected by strips *f f*, of iron, which are bolted to the beams, and form clevises with the keys *e e*, coupling them to the axle, and permitting them to have any oscillating motion up and down desired. J J are center beams, which are fastened to rod G by means of swivels K, as shown in Fig. 6, said swivels being provided with an eye or hole to admit the rod G to pass, while the same rests between the flanges of the keys, to prevent sliding right or left, the round part of the swivel K being riveted or substantially fastened to the iron strips *f*, around the front ends of the beams J, allowing the same to turn thereon, which gives a lateral motion, allowing the inside shovels or plows to be governed at will. The four iron strips *f f*, being bolted to the beams H H and J J, permit of the frame being taken off of the rod G for shipment or repairs. There are slots through the axle holding the inside keys, *e e*, which slots are sufficiently long to allow the same to be moved right or left, in order to set the beams J J closer together or wider apart, as may be desired. The rear or back ends of beams J J are chamfered or turned rounding, in order to give the same lateral motion as given by the swivels K, the said ends extending under the rear cross-beam, I, and held to it by double links L L, welded at right angles, as shown in Fig. 4. The upper or horizontal part of each of said T-shaped links is bolted to the beam I by two bolts, so as to keep it from turning laterally, and may be moved so as to place the beams J J any desired distance apart.

The lower or perpendicular part of each link holds the rear end of a beam, J, allowing the said beams to oscillate up and down independently of each other or of the side beams, which enables the operator to guide them much better and with greater ease than if the beams were held all on a line. This motion is of great advantage when cultivating or plowing side-hill land, allowing the stocks or shovels to be lengthened or shortened, according to the surface of the ground, and thereby securing an even depth of furrow, the same being the result when moving the shovels laterally—where one shovel will lengthen the other

will shorten—which still gives a uniform depth of furrow, so indispensable to perfect cultivation.

Near the rear ends of the beams J J are uprights M M, halved into the beams, and well bolted to the same, forming rests to which to bolt the cross-piece N, which holds the shovels at any relative angle or distance apart, at the same time allowing them to move laterally, or to oscillate up and down, or, by placing the cross-piece N in the notches (shown in Fig. 1) on the rear sides of uprights M, make the shovels stationary, so far as moving laterally, which is desirable in cultivation where the seed has been drilled in straight lines.

In the center of the cross-piece N is bolted or riveted a stirrup, O, through which I pass the guide-pole P, which is used when the operator desires to walk, to guide the inside shovels or plows, or to raise all of the plows out of the ground in passing obstacles, &c.

I fasten the front part of the guide-pole P to the rear end of the draft-pole A, or rather to the lower hinge, *g*, of the same, by means of a bolt, *h*, which passes in a long slot in said lower hinge, and by the pole P, passing back through the stirrup O, the operator, holding the rear end in either hand, is enabled to guide the two middle shovels at will, while the outside one moves on in a straight line.

On the guide-pole P is placed a bolt with a right-angle triangular head, *k*, which acts as a catch. When the plows are raised the desired distance the square part of the head *k* passes in a slot, *i*, in the upper hinge, *g'*, and holds the shovels out of the ground.

When the operator is ready for work, he elevates the guide-pole P a short distance, and the angular part of the bolt-head *k* raises the hinge *g'*, and down comes the machine. When the operator chooses to ride, which is generally the case, the pole P is removed, and by one bolt, *m*, I place the seat R between the hinges *g g'* on the rear end of the draft-pole A, when the operator sits astride the same, placing his feet on the foot-pieces *n n*, and thereby with ease being enabled to guide the inside shovels laterally with his feet, as well as to allow them to move up or down, to suit the surface of the ground.

By the use of the double hinge *g g'*, by loosening the bolt *m*, the seat may be raised to suit the height of the operator.

On each of the beams H and I, I place a double sheath or stock, S, by one bolt through the top end of the same, and through the respective beams.

On each beam I use a double brace, T, of light iron, which is fastened to the beam by one bolt, and passing down toward the lower end of the stock, between the two parts of the same, bolting the four pieces together, and putting a wedge-shaped washer between them, the braces inclining forward toward the axle sufficiently to hold the stocks to their places.

By the use of the double stocks and braces, made substantially in this manner, I secure a center draft, and while I lessen the weight and expense, I secure greater strength than can be attained by any of the heretofore-known ways.

The upper part of the stocks S and the lower part of the braces T are provided with extra bolt-holes, which enables me to set the plows or shovels any depth or slant desired.

The thickness of the washers above mentioned is just sufficient to allow the stocks to fit snugly on the flange *p* of the shovel or plow U. This flange, being welded, rolled, or cast solid with the blade, secures an infinitely greater amount of strength than can be obtained in any other way, and gives the advantage of fastening the same to the stock in the manner shown, thereby securing the absence of bolts through the face of shovel or plow, also giving opportunity of using wooden pins, which will ward off any accident by coming in contact with unseen obstacles, by breaking and letting the shovel or plow turn on the bolt holding the same to the stock, causing no damage to the machine or operator, while the extra metal in the flange *p* or stay of the plow may be used at any time in sharpening the shovel, or in drawing down and forming a nose or point on the same, in order to secure lighter draft and deeper plowing; or the flange may be left, so as to set on the bottom of the furrow, and thus the shovel-plow may be made to run as steady as a stirring-plow, and so pointed as to suck to the ground the same as breaking-plows.

On each end of the rod G, I place an arm, V, parallel with the side beams, H H, extending back a suitable distance, and on the rear ends of said arms, at right angles, I form a double flange or lifter, *r*, which takes hold of the beams when the rod G may be turned, and raising them, and consequently the plows, up and down.

To the rod G is attached a lever, W, to the end of which are fastened two cords or chains, *s s*, one of which passes upward to the windlass X, and the other down under the axle, and under the windlass-frame, up to the windlass, and fastening, so as to wind the opposite way from the upper rope or chain.

When the operator desires to raise the plows out of the ground, he turns the windlass so as to wind the upper cord or chain. When the plows are raised a sufficient height, the operator passes one of the rods *t* through to the left, so as to catch the handle or crank of the windlass which holds them, as desired. When I wish to give the machine more downward draft than the natural draft, I reverse the crank, which reverses the action of the lever W, and causes the arms V to bear down upon the beams H H, pressing the shovels in the ground, at the same time raising the wheels from the ground, which secures a very light draft, the team having no weight to overcome but the resistance of the ground; whereas if the draft is adjusted as usual, the major part of the weight necessary to move the machine

is first placed on the axle, and then has to be hauled, making the machine plowing the same depth of furrow draw fully one-third harder than when the draft is adjusted as in my machine.

By using the equalizer E *d*, the vibratory motion necessary to the horse is obtained on the outside shoulders, by the motion of the equalizer-bar under the draft-pole, to which bar hooks are attached at each end to fasten the outside traces.

Directly under the draft-pole, in front of the equalizer-bar E is a pulley, *v*, held to the pole by a bolt passing through it and the brace D, which vibrates easily back and forth, around which is a short chain, *w*, or other suitable fastening, with hooks at each end, to which the inside traces are attached, giving the inside shoulder motion.

The main object of the equalizer is to insure a steady forward motion of the machine or cultivator. When one horse starts there is no power applied to the plow until the traces of the other horse are tightened, when the power is applied equally on both wheels, which causes the plows or cultivators to move forward in a straight line, and not vibrate right or left. Therefore, if one wheel strikes a large clod or other obstacle, the plow is carried directly over the same, which aids the operator very materially in doing good work.

The windlass X, above mentioned, may be placed on either side of the machine, to suit the convenience of the operator.

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

1. The combination of the pole A, cross-bar C, and axle B, secured together as described, with the equalizer-bar E, chains *d d* and *w*, and pulley *v*, all constructed and arranged substantially as set forth.

2. The combination of the rod G, with arms V V, having flanges *r r*, lever W, cords or chains *s s*, windlass X, and rods *t t*, with the axle B and cultivator-beams H H, all constructed and arranged substantially as shown and described, and for the purposes herein set forth.

3. The combination of the plow-beams H J, adjustable double stocks S S, and double braces T T, and the shovels U, with flanges *p*, all substantially as set forth.

4. The arrangement, upon the rear end of the draft-pole A of a cultivator, of the double hinge *g g'*, for adjusting and holding the seat R, substantially as herein set forth.

5. In combination with the beams H H, the arms V V, with flanges *r r*, and connected to the rod G, all as shown and described.

6. The combination of the beams J J, uprights M M, cross-piece N, double T-shaped bars L L on the bar I, and swivels K K, all substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of August, 1870.

VENENDO P. HARRIS.

Witnesses:
PUTNAM EWING,
JOHN J. FOLEY.