

(No Model.)

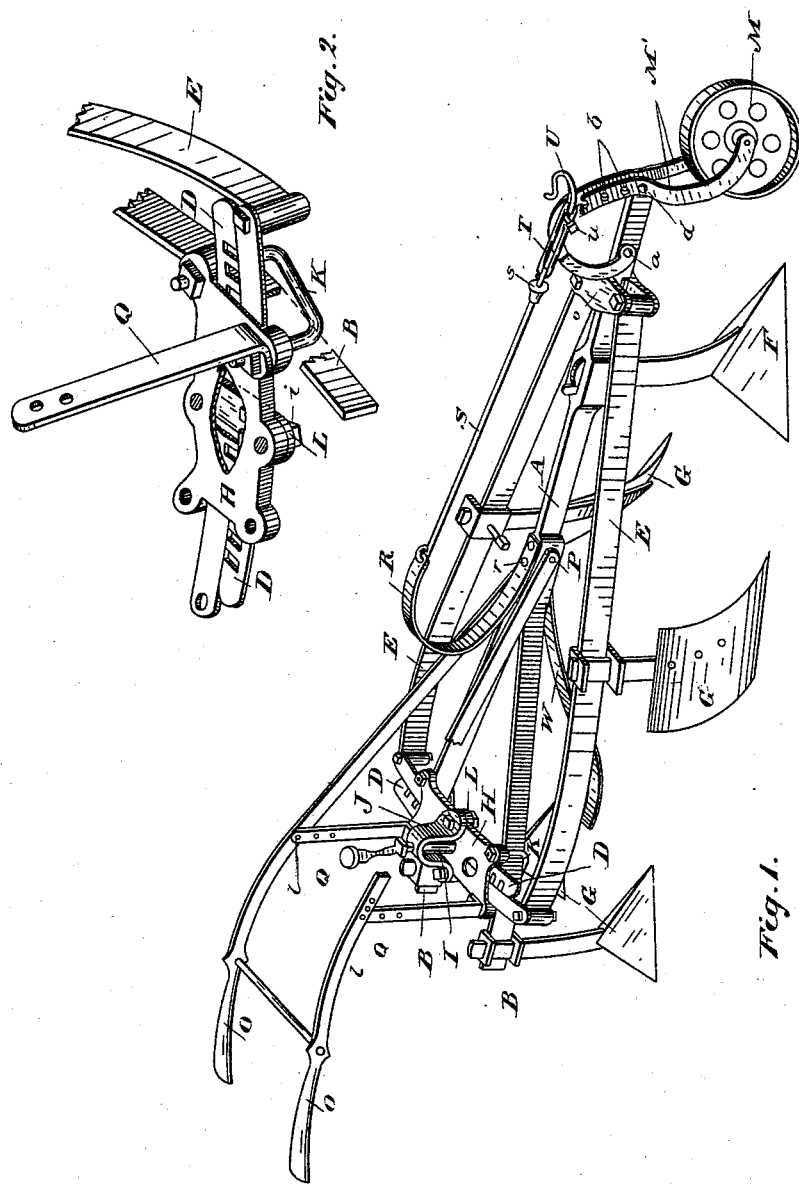
2 Sheets—Sheet 1.

G. BETTSCHEN.

CULTIVATOR.

No. 347,083.

Patented Aug. 10, 1886.



Witnesses.

James E. Mayhew
Charles H. Riches

Inventor.

Emil Bettschen
By Donald C. Ridout of
Attys

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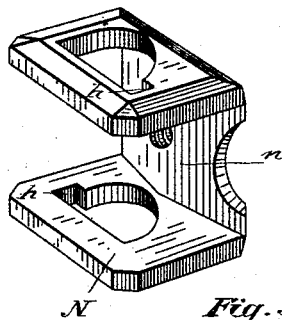


Fig. 3.

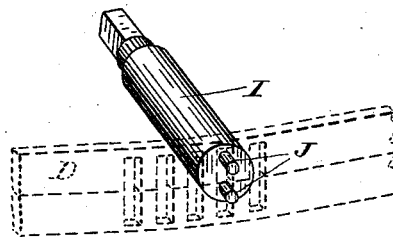


Fig. 5.

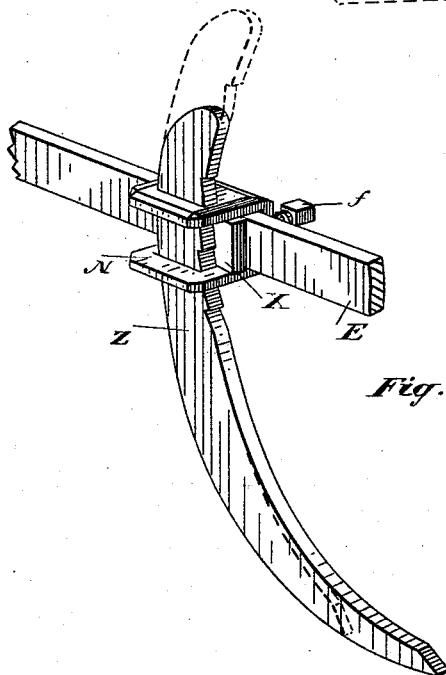


Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

GOTTLIEB BETTSCHEN, OF WILMOT, COUNTY OF WATERLOO, ONTARIO,
CANADA.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 347,083, dated August 10, 1886.

Application filed March 15, 1886. Serial No. 195,225. (No model.) Patented in Canada March 30, 1885, No. 21,343.

To all whom it may concern:

Be it known that I, GOTTLIEB BETTSCHEN, of the township of Wilmot, in the county of Waterloo, in the Province of Ontario, Canada, Yeoman, have invented certain new and useful Improvements in Cultivators, of which the following is a specification.

The object of the invention is to construct a very simple, light, iron cultivator, strong, and quickly adjusted in regard to the angle of the teeth and to the width and depth of the cut; and it consists, essentially, of a flat iron center beam having flat iron sides hinged on either side of its front end, and extending to the rear, the back end of each side being provided with notched cross-bars extending past each other through a guiding-frame made to hold the two flat notched bars edge to edge as to their notched sides, a pinion supported by a bracket, and having two lugs on the flat lower face of said pinion to mesh with the notches of the cross-bars, the revolutions of said pinion in the bracket causing said notched cross-bars to move in and out past each other, thus altering at will the width between the outerside bars, E, to which the teeth G are attached. The said two lugs in the pinion or spindle prevent the notched cross-bars from moving laterally when the said two lugs are left or set in a position parallel with said notched cross-bars after the widths between the side bars, E, have been adjusted before commencing work. The regulating-plate L may be loosened or tightened by means of the bolts and nuts i, which clamp it to the guide-plate H, so that the spindle I may be regulated to move easily when working in fine or light soil, and stiffly when working among stones or in stiff soil. The center beam, A, has bifurcated ends extending beyond the guide-plate holding the cross-bars, the guide-plate being bolted by clips arranged to extend across each arm of the bifurcated beam and securely fastening the guide-plate in position. A peculiarly-shaped bracket is provided for securing each tooth, the shank of which is curved and notched at the upper end, and said tooth is set in position within said bracket by means of a wedge inserted between the shank of the tooth and the beam, either from the front or rear sides of said shank, and the brackets may be

placed on said beam, either from the inner or outer side thereof, as hereinafter described. Thus the angle of said tooth may be adjusted according to the nature of the ground to be cultivated. There is also a spring attachment to the drag-hook, for the purpose of diminishing concussion when the points of the teeth strike stones or other obstructions in the ground. The outer bars, E, are also curved at their rear ends and hinged to the notched cross-bars before mentioned. This curving of the outer bars admits of the teeth being adjusted on any part of said curve, if desirable, and thus altering their set as they enter the ground. A means for the easy adjustment of the height of the caster-wheel is also designed. The shanks, which are adapted to be attached to any kind of steel blades, are also curved, as indicated, and notched along the upper front edge, where they come in contact with the bracket, and are fixed in position by means of a wedge, so that the angle of the teeth may be changed according to the nature of the soil to be worked, or they may be set up or down, as desired. There is also a flat spring attached to the rear portion of the machine, which rests on the ground, as indicated in Fig. 1, when working on very soft ground. The handles are also hinged to the frame, so that their rear parts may be raised or lowered, if necessary, to suit the height of the person operating the cultivator.

Figure 1 is a perspective view of the improved cultivator, showing, among other things, the curved ends of the outer bars on which the teeth are adjusted. Fig. 2 is a detail showing the manner in which the guide-plate for the notched cross-bars is held in position. Fig. 3 is an enlarged detail of the bracket for securing the shanks of the teeth or scufflers onto the frame of the machine, showing the beveled sides and two notches. Fig. 4 is a detail of curved tooth with notched upper end, showing it held in position by means of the wedge side bars and bracket with set-screw, and how the direction of the points of the teeth or steel attachment to the shank may be changed. Fig. 5 is a detail of the spindle, showing the lugs or projections meshing into the notches of the cross-bar D.

In the drawings, A is a center beam made

of flat iron or steel, and having bifurcated ends B extending to the back of the machine, a tooth, G, being fastened to each end outside of the notched cross-bars D, which are hinged or pivoted to the rear end of their respective side bars, E, the front ends of which side bars are hinged or pivoted to a cross-piece, *o*, fastened to the front end of the beam A. The rear ends of the side bars, E, adjoining the hinged connection with the notched cross-bars, are curved, as indicated in Fig. 1. To these side bars, E, the teeth G are attached by means of the wedge and bracket, hereinafter more particularly described, either toward the front or to the rear on the curved portion, when it becomes necessary to change the direction of the points of the teeth or blades of the scufflers inward or outward. A tooth, F, is secured to the center beam, A, and as the teeth G are fastened to the end of the bifurcated bar B by means of the wedge and bracket, they follow on each side of the tooth F.

H is the guide-plate through which the cross-bars D pass.

I is a spindle held by the bracket J to the guide-plate H. This spindle has a crank at its upper end, for the purpose of giving a rotary motion to the spindle I, which works in a hole through the guide-plate H, and on the flat lower end of the said spindle are two lugs or projections, *j*, as indicated in Fig. 5, which mesh into the notches in the cross-bars D, as the spindle is caused to revolve, thus causing the said notched cross-bars to be adjusted inwardly or outwardly in order to alter the angle of the side bars, E, making it more obtuse or acute, as occasion may require. The said spindle has a shoulder at the upper end, upon which the bracket rests, holding it down upon the cross-bars, upon which it presses when the regulating-plate underneath is drawn up by means of the bolts *i*. A plate, L, passes across the bottom of the bars D and at right angles thereto, and is held in position by the bolts *i*, which pass through the plates H L, and through the bracket J, so that by adjusting the nuts on the bolts *i* the notched cross-bars D can be made to move easily or tardily, as may be required.

On reference to Fig. 2 it will be seen that the plate H is held in position by the clips K, which extend around the bottom edge of the bifurcated bars B, and as these bars extend outwardly at an angle the clips K have a wide bearing-surface, and thereby securely brace the bars B to the plate H, so as to resist any twisting action on the bars B by side strain on the teeth G. The caster-wheel M is journaled onto the end of the bars M', which are curved downwardly at their upper ends, so that the ends, when they are pivoted at *a* to the beam A, are below the top of the curved caster-wheel bars. A series of holes, *b*, are made in the bars M' at an equal radial distance from the point *a*, which is the pivot-point for the caster-wheel bars M'. A pin, *d*, is inserted through one of the holes *b* through a corresponding

hole in the end of the center beam, A. By moving the caster-wheel bars on their pivot *a*, and placing the pin *d* in one or other of the holes *b*, the caster-wheel M can be raised or lowered at will, so as to readily alter the position of the draft upon the plow. The handles O are hinged to the frame by bolt P at the point of bifurcation of the center beam, A, and are centrally supported by the uprights Q, by means of bolts *l*, which pass through them and holes in the uprights, which are rigidly attached to the guide-plate. There is a spring, R, attached at one end to the center beam, A, at the point of bifurcation, by the bolts *r*, and connected at the other end with a rod, S, having a stop or eye, *s*, at its forward end. This rod S is connected by said eye *s* to a link, T, which passes between the two circular supports of the caster-wheel. This link allows of several inches play on the pin *u*, and is connected with the drag-hook U. The drag-hook may also be connected to the link T by a small coil-spring, if desired.

The cultivator is drawn by means of the hook U, link T, connected thereto by the coil-spring or otherwise, and rod S, attached to the spring R, so that in the event of the points of the teeth meeting with an obstruction by striking against stones or roots the link T runs forward until the end of the rod S comes in contact with the circular supports M' of the caster-wheel, thus preventing the spring R from being drawn any farther forward. Thus all serious concussion to the machine is obviated.

Before the bifurcated bars B there is another spring, W, as indicated in Fig. 1, for the purpose of preventing the rear end of the cultivator from sinking too deep in extremely soft ground. It is fastened at one end by the same bolt, *r*, that connects the spring R to the main frame at the point where the bifurcation of the center beam commences, the other side resting on the ground on its flat side in the center in front of the rear teeth, G.

By Figs. 3 and 4 the mode of fastening the teeth in any position desired is indicated. The bracket N has notches *h* cut on both sides thereof, but in opposite corners, so that when the bracket is placed in position, either from the inside or outside of the beam or bar to which the tooth is to be attached, the shanks of the teeth may rest in said notches. The inner face, *n*, of the bracket N is beveled off outwardly from the hole for the set-screw *f*, to allow of the turning of the shank, held by the bracket against the opposing side of the beam, either outwardly or inwardly, as required, and the insertion of the wedge X between the shank and the beam. The bracket N fits loosely on the flat bar, and may be set on the flat bar at an angle, as indicated in the drawings. The said bracket N may be placed in position on either side of the beam, the wedge X being attached to the beam or flat bar by means of a loose ring, so that it may not be lost. This wedge can be used on either side of the beam, and can also be inserted into place from either

the front or rear side of the bracket. The shank Z is curved, as indicated, and may be fastened to any kind of steel blade, and has a number of notches along its front edge at its upper end, where it comes in contact with the bracket, for the purpose of so setting the shank as to alter the angle at which the point enters the ground. For instance, when the shank is placed down, so that its uppermost notch rests against the front upper side of the bracket, the end of the curved shank will be somewhat parallel to the surface of the ground, and will thus be in position to work in soft or mellow ground; but if the shank is set higher, so that one of its lower notches rests on the bracket, the curved shank or tooth will be let back, thus giving its point or lower end a more downward position, and by resting the lowest notch on the curved shank on the upper front side of the bracket an extreme downward set of the lower end of the shank is produced, which becomes necessary when working in very hard clay or gravel. This method of setting the shanks of the teeth either up or down is of great importance, on account of variations in the nature of the ground to be operated on. It is also necessary to change the position of the teeth either inwardly or outwardly, owing to the variations in the nature of the soil, also as to its condition, whether wet or dry; and for this purpose I make the slant or bevel on the inner face of the bracket N on both sides of the hole for the set-screw, thus allowing the bracket to move sufficiently in a lateral direction to give the shank, when placed in position on the other side of the beam or flat bar, an inward or outward turn, the wedge X being forced into position between the shank and the bar either from the front or rear.

What I claim as my invention is—

1. A cultivator-frame composed of center beam, A, with bifurcated ends B, braced to the guide-plate H by the clips K, extending behind the plate H, to form a support for a pair of rear teeth, in combination with the two movable side beams, E, each having an inward curve at the rear end, where they are hinged to the outer ends of the notched cross-bars D, and secured to the front end of the beam A, said cross-bars passing through and being held in position by the guide-plate H, within which they are adjusted, and held in place by the spindle I, having two lugs, j, at the lower face, together with the upright bracket J, and regulating-plate h, adjustable by the bolts i, the whole being constructed substantially as and for the purpose specified.

2. In combination with the caster-wheel and bars M', the drag-hook U and link T, passing loosely through between the curved bars M', and supported and limited by the pin u, the rod S, having a stop or eye, s, at its forward end, spring R, and center beam, A, to which it is secured, substantially as and for the purpose specified.

3. The bracket N, with an inner face, n, beveled, as specified, and having two notches, h, made on the opposite corners, and adapted to fit easily on either beam E or bifurcated arms B, so as to allow of adjustment thereon at various angles when required, in combination with the curved shank Z, for a tooth or scuffer, notched at its upper front edge, where it comes in contact with the bracket, as specified, wedge X, and set-screw f, arranged substantially as and for the purpose specified.

GOTTLIEB BETTSCHEN.

In presence of—

LOUIS VON NEUBRONN,
FREDERICK ROHLELLER.