

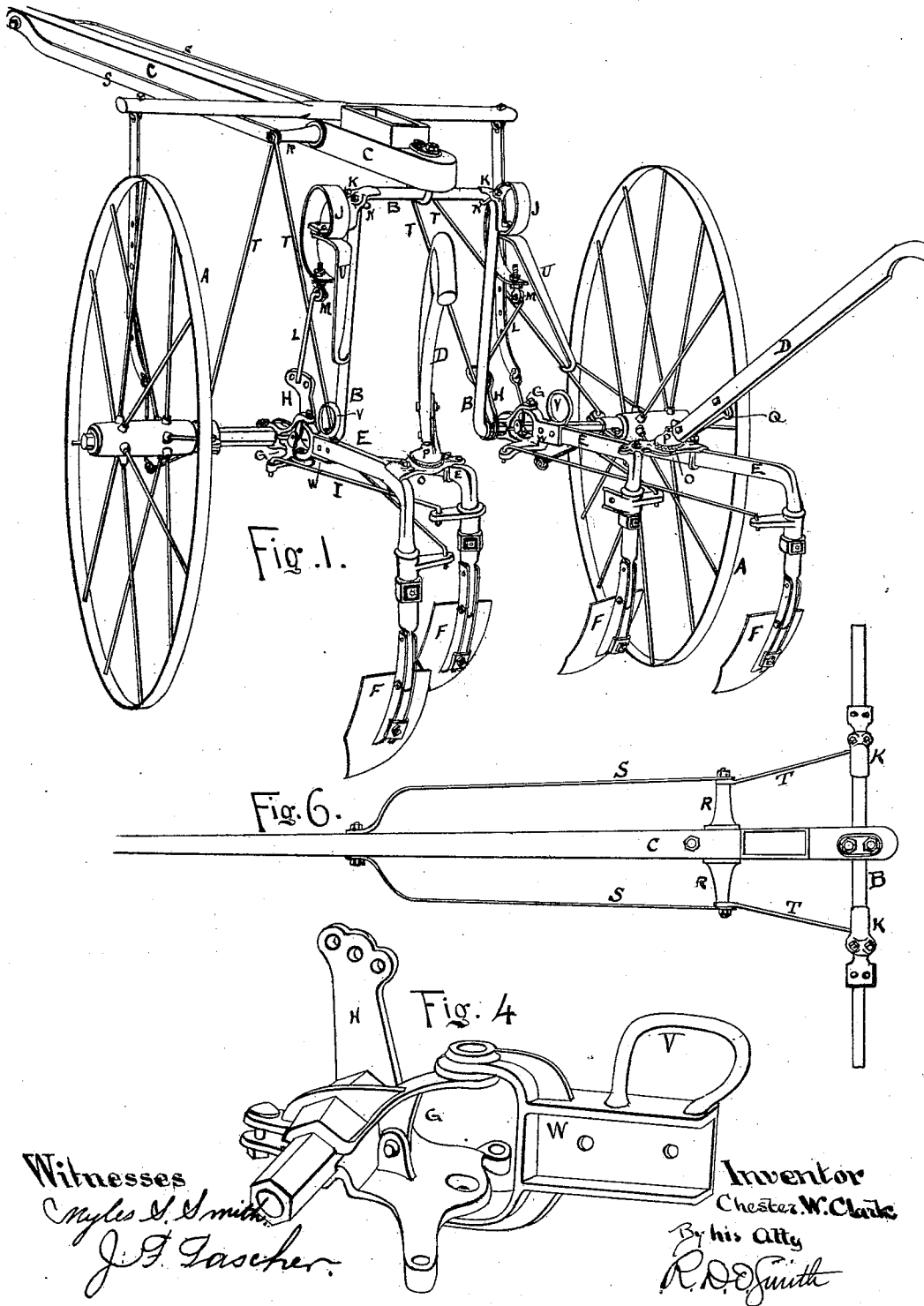
(No Model.)

2 Sheets—Sheet 1.

C. W. CLARK.
CULTIVATOR.

No. 469,659.

Patented Feb. 23, 1892.



Witnesses

Myles S. Smith
J. F. Gascher

Inventor

Chester W. Clark

By his atty
R. D. Smith

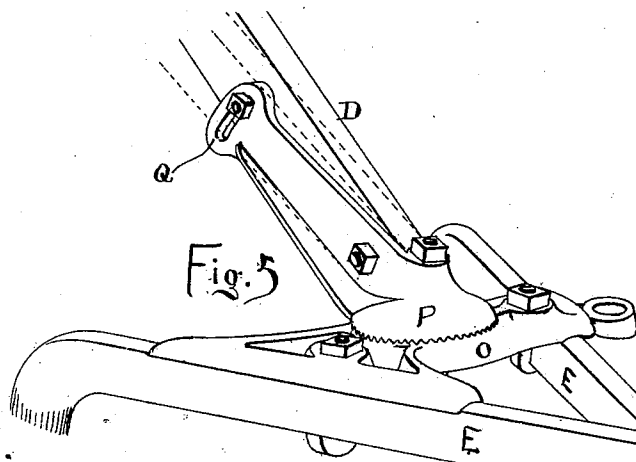
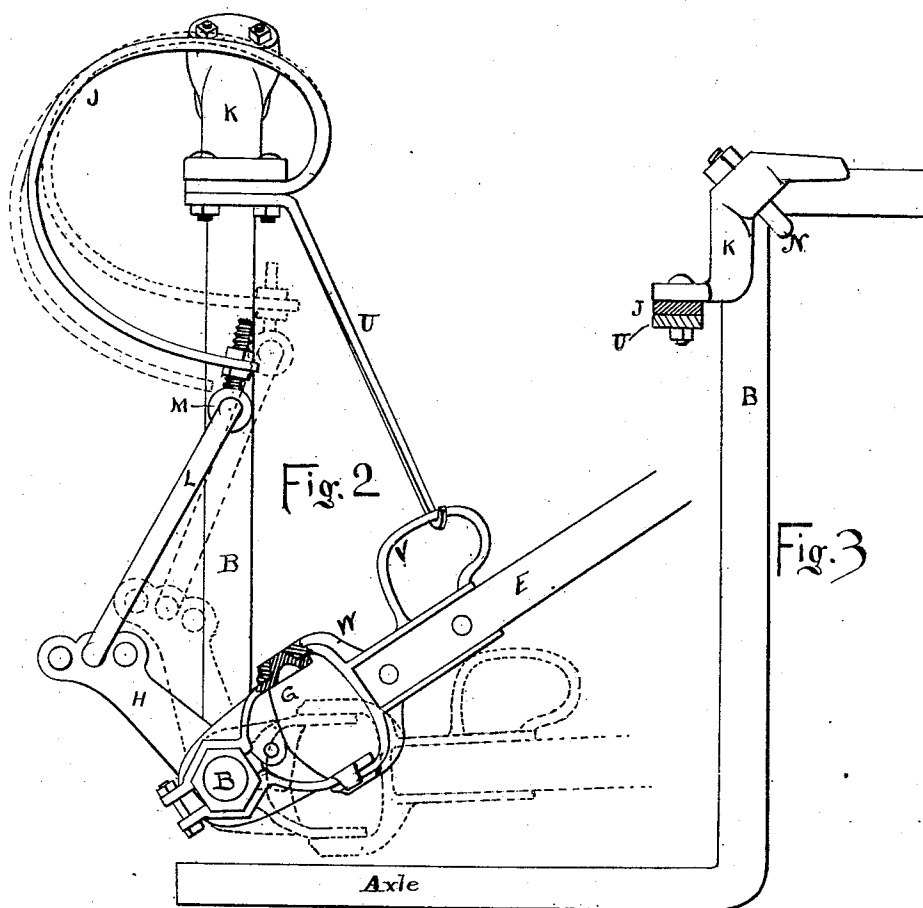
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UNITED STATES PATENT OFFICE.

CHESTER W. CLARK, OF MISHAWAKA, INDIANA.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 469,659, dated February 23, 1892.

Application filed March 23, 1891. Serial No. 386,035. (No model.)

To all whom it may concern:

Be it known that I, CHESTER W. CLARK, of Mishawaka, in the county of St. Joseph and State of Indiana, have invented new and useful Improvements in Cultivators; and I do hereby declare that the following is a full and accurate description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a perspective view of my cultivator. Fig. 2 is a side elevation of my balancing-spring. Fig. 3 is a side elevation of the bracket to which said spring is attached. Fig. 4 is a perspective view of the drag-bar coupling detached. Fig. 5 is a perspective view of the handle-bracket and the adjustment for the handle. Fig. 6 is a plan of the tongue and spreader.

This cultivator relates to that class known as "walking or riding cultivators," though the improvements herein described and claimed are not restricted in utility to cultivators of that class, and I have myself used them in cultivators of other kinds.

The prime object of every manufacturer is to so combine the several parts which either do or may enter into the composition of the machine that all special desires or preferences of purchasers may be gratified with minimum amount of expense and trouble in making changes in the combinations of the machine. For instance, some farmers will desire the handles set higher or more toward one side than others, and to suit all it becomes necessary to provide both vertical and lateral adjustments for the handles or to provide a variety of brackets. I prefer the former. Again, some farmers will prefer a plain tongue, others will prefer a broad or spreading tongue, which will keep the horses far apart, and it has been customary to meet the latter desire by a tongue made of two pieces united at the front, but widely separated behind. I prefer an attachment, which with but little trouble or expense permits the same tongue to serve either way. Therefore in the machine herein presented and described I have combined improvements which enable me, in the same machine, to meet a variety of preferences at a rate so cheap that the expense is merely nominal.

Having now indicated my invention, I will in detail describe its parts.

A A are the ordinary bearing-wheels. B is the axle-arch. C is the tongue. T T are the usual tension-braces extending from the tongue to the axle near the wheels. E E are the drag-bars, having shovels F attached to their rear ends. At their forward ends the drag-bars E are attached to the axles by means of a jointed member G, which is at liberty to rotate on the axle and also to be moved laterally on the same to adjust the drag-bars toward or away from each other. They are also provided with short balancing-levers H.

The shovels F (shown in the drawings) are swiveled and provided with parallel rods I, as heretofore patented to me November 5, 1889, No. 414,290; but this feature does not form any part of my invention claimed herein. To this point the parts named are those which are already known and in common use.

I will now proceed to describe the parts which are novel and claimed herein.

The counter-balance.—It is customary to provide the cultivator with a counter-balance to sustain a part of the weight of drag-bars and shovels to render them more easily handled by the operator. This counter-balance has been in the form of a spiral spring coiled about the rod, having one end connected to some part of the mechanism which carries the drag-bars and shovels and at the other end passing through some part of the frame, which also acts as an abutment for the resiliency of the spring. Sometimes the relation of the parts has been such that when the shovels were fully depressed and in action said rod would have passed the dead-center and would tend to depress the shovels; but such depressing pressure would not usually be required. The use of springs, which require a guide—such as the coiled spring above alluded to—suffer the serious defect of friction and wear in the guide, and such friction cannot be removed, because the machine is exposed to dust and dirt, the deleterious effect of which is enhanced by any attempts at lubrication. I am aware also that flat springs have been employed for the same purpose, one end of such spring being rigidly fastened to some proper part of the frame and

the other end being carried around to a point in front of the coupling-arm, to which it is connected by a connecting rod or link; but so far as I am aware such springs have always been arranged to operate in a manner essentially different from my spring, herein-after described in this particular. The tension of the spring heretofore used increases as the drag-bar is depressed and constitutes a force constantly in opposition to the proper operation of the shovels, whereas my spring is so arranged that while the tension of the spring increases as the drag-bar is depressed its effective pressure decreases and it ceases to disturb the action of the plows.

My counterbalance-spring J obviates all the objections heretofore found to refer to counterbalance-springs as heretofore used. The spring J is C-shaped, and at its upper end it is bolted to the bracket K, which in turn is rigidly secured to the top of the standard arch B. The lower end of the spring J is pendent and free and is attached to the balancing-lever H by means of a short connecting-rod L. The means of connecting said spring and connecting-rod is an eyebolt M, which is made adjustable in the end of the spring by two adjusting-nuts on said eyebolt, whereby the "eye" may be placed nearer to or farther away from the spring, and because the length of the rod L is unchangeable it follows that the spring must be flexed to a greater or less degree and its tension correspondingly changed. The pressure of the spring as to the weight of the drag-bars and shovels may also be varied by shifting the connecting-rod L from one to another of the holes in the lever H, said holes being at different distances from the center of the axle, and they therefore represent different degrees of leverage. Aside from the absence of all frictional resistance in the action of this spring it also has the merit of varying its pressure as the leverage of H varies with position—that is to say, as the drag-bars are raised up the lever H approaches horizontally, the angular leverage increases, and at the same time the spring looses tension by expansion—so that the counterbalancing effect of said spring is substantially equal at all positions of the drag-bar. This is of great advantage to the attendant, as it renders it equally easy to handle the shovels at all positions; but the form of this spring may be varied without changing its function. I therefore do not wish to be strictly limited. The bracket K is fashioned to pass over the bend in the arch, as shown in Fig. 3, being made concave on the lower side to fit the arch-bar, and a clip N passes around the arch-bar in the angle and renders it impossible for the bracket to move.

The handle adjustment.—The drag-bar E is either double or is bifurcated at its rear end and a bridge-plate O spans the space from one to the other and is bolted to both. On the top of this bridge-plate there is a radially-

serrated surface upon which the arm-plate P is fitted with a central bolt to bind them together. The plate P is provided at its extremity with a transverse slot Q, and the handle D is bolted to the flat side of said arm with two bolts, one of which passes through the handle near its extremity and through the plate P, the other passes through the handle and through the slot Q. The former acts as a pivot-bolt, and the latter permits adjustment of the handle in a vertical plane. Thus the serrated surface permits adjustment of the handle in a horizontal plane, and the slot Q, in the plate P permits adjustment in a vertical plane, and these adjustments can be made by the farmer himself at any time. The hook-arm U is attached to the bracket K by the same bolts which secure the spring J to said bracket. This is more than a mere convenience. It places the hook-arm far forward out of the way in operating and guiding the drag-bar and its attached shovels, and it enables me to shorten the tongue by dispensing with the usual rear extension of the same to which the supporting-hooks are usually attached. The loop V is attached to the coupling-plate W, preferably being cast integral therewith. It serves as a point of attachment for the hook at the extremity of the arm U.

The tongue.—The tongue C is preferably made of a single stick, and is fastened to the top of the arch B by a clip, as is usual in such cases. Hollow studs R are placed on the sides of the tongue at a short distance in advance of the arch B, a bolt passes through said studs and holds them in place, together with the forward extremities of the braces T. To constitute a spreading-tongue this straight tongue is provided with spreaders S, which may be applied or removed at pleasure. By these means my cultivator is adapted to all preferences or wants.

Having described my invention, I claim—

1. A cultivator - frame, a lifting drag-bar jointed to the same, a C-shaped spring J, rigidly attached at one end to said frame and so bent as to locate its free end between said point of attachment and said drag-bar, and a connecting-rod whereby the resiliency of said spring will exert a thrust upon said drag-bar to counterbalance the same, in the manner set forth.

2. In a cultivator, a C-shaped spring fastened rigidly at one end and so bent as to locate its free end beneath the point of attachment, and an adjustable eyebolt attached to the free end of said spring, whereby the point of attachment of said free end may be adjusted to vary the tension of said spring.

3. A lifting drag-bar, a C-shaped spring J, rigidly fastened to the frame at one end and at its free end provided with an adjustable eyebolt M, and a connecting-rod L whereby said spring is attached to lift and counterbalance the drag-bar, for the purpose set forth.

4. In a wheeled cultivator, a C-shaped bal-

ancing-spring and a lifting drag-bar, said
spring being provided with a tension-eye-
bolt, a coupling-arm, and a pitman to connect
said coupling-arm and eyebolt, for the pur-
5 pose set forth.

5. In a cultivator, a single tongue C and
detachable spreaders S S, for the purpose set
forth.

6. In a wheeled cultivator, the following

members, to wit: a supporting-bracket K, a 10
C-shaped balancing-spring J, and the hooks
U to support the drag-bar when out of action,
said spring and hook being attached to said
bracket by the same bolts.

C. W. CLARK.

Witnesses:

R. W. SMITH,
R. D. O. SMITH.