

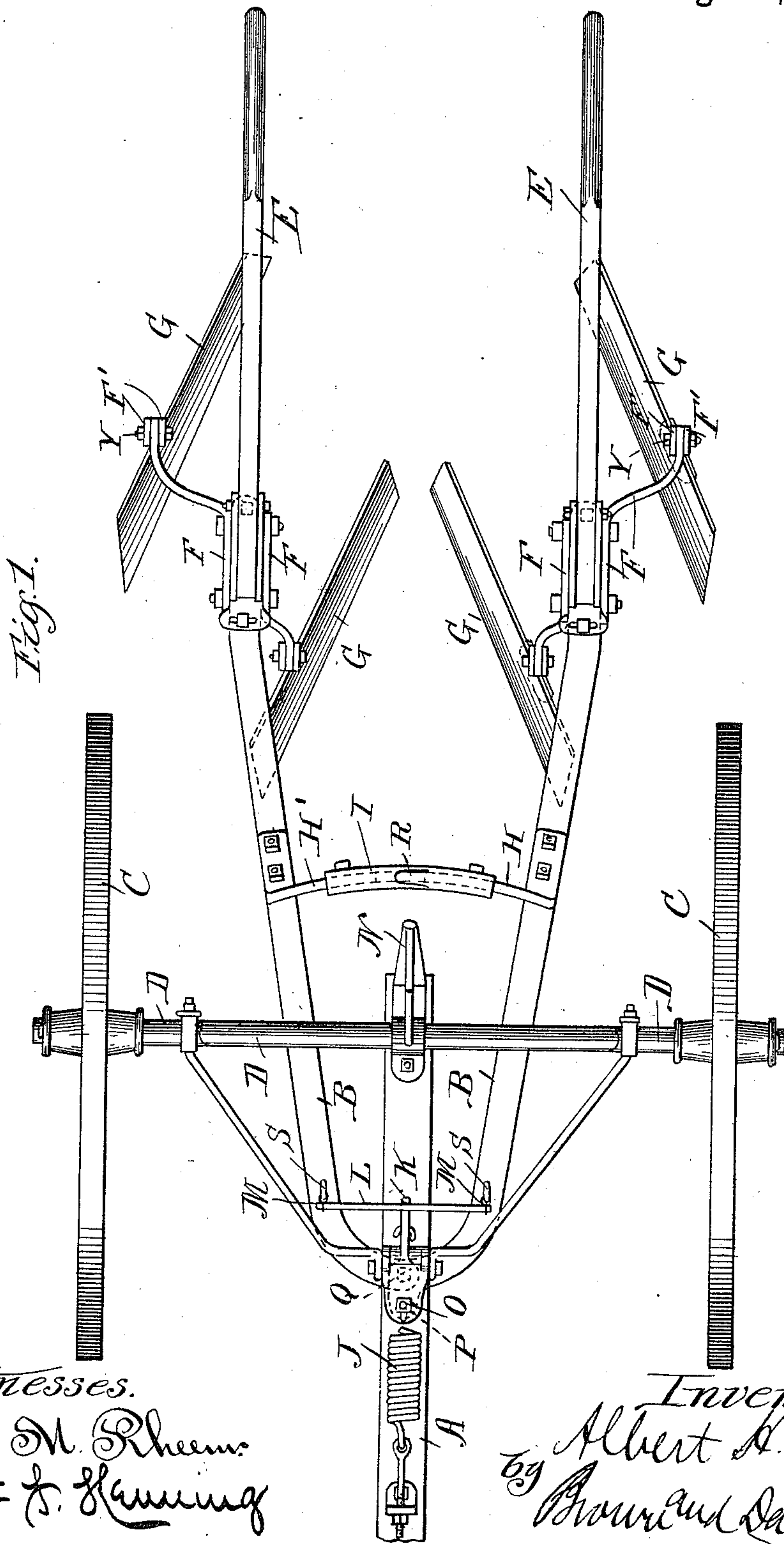
(No Model.)

2 Sheets—Sheet 1.

A. H. SEARS.  
CULTIVATOR.

No. 566,417.

Patented Aug. 25, 1896.



Witnesses.

Wm. M. Rheem.  
Wm. L. Fleming

Inventor:  
Albert H. Sears  
by Howard Barbatt's

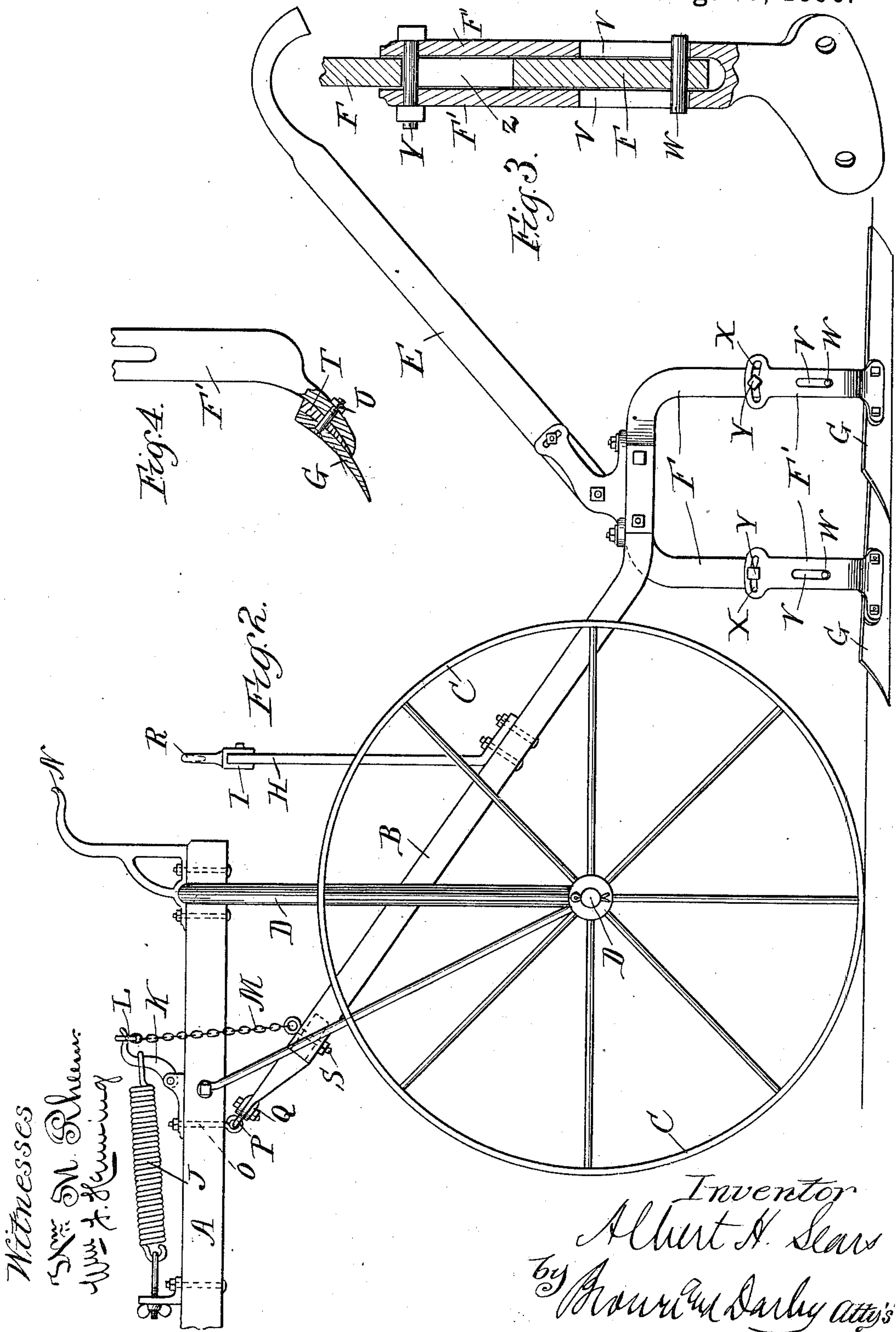
(No Model.)

2 Sheets—Sheet 2.

A. H. SEARS.  
CULTIVATOR.

No. 566,417.

Patented Aug. 25, 1896.



Witnesses

Wm. M. Sherrill  
Wm. F. Hemming

Inventor  
Albert H. Sears  
by *Francis Darby atty's*



# UNITED STATES PATENT OFFICE.

ALBERT H. SEARS, OF PLANO, ILLINOIS.

## CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 566,417, dated August 25, 1896.

Application filed February 1, 1895. Serial No. 536,921. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT H. SEARS, a citizen of the United States, residing at Plano, in the county of Kendall and State of Illinois, have invented a new and useful Improvement in Cultivators, of which the following is a specification.

This invention relates to improvements in cultivators, and its object is to increase the efficiency of machines of this class.

The invention consists, substantially, in the construction illustrated in the drawings, as set forth in the specification and more particularly pointed out in the claims.

Like letters of reference refer to similar parts in the several figures of the drawings, in which—

Figure 1 illustrates a plan view of a cultivator. Fig. 2 illustrates a side elevation of the same. Figs. 3 and 4 illustrate detail views of the cultivator blades or shovels and standards for supporting the same.

In the drawings, A designates the tongue and main frame of the cultivator, which is of the usual construction. B designates the drag-bars, the construction of which is somewhat peculiar, as will be hereinafter specified.

The wheels, which are of any well-known form, are designated by the letter C, and are mounted upon a suitable axle, which is designated by the letter D in the drawings.

E designates the handle of the cultivator, and F designates the upper members of the standards for supporting the shovels or blades, while F' designates the lower members of such standards or shanks of the shovels.

G designates the shovels or blades.

H H' respectively designate two members of the arch for regulating the width apart of the drag-bars or shovel-gangs, and I designates the grooved connecting-piece for joining these two members of the arch and adjusting the same.

J designates the spring for partially supporting the weight of the drag-bars and cultivator-blades.

K designates the hooked rock-lever, and L the evening bar or rod supported by the rock-lever and itself supporting the chains or rods M M, which connect the same with the drag-bar arms.

N designates the hook for supporting the

cultivator when it is lifted, so that the yoke engages such hook.

Having thus generally outlined the several parts of the machine, a more detailed description will now be given of the features of the invention.

In describing the entire machine it may, as is usual, be divided into two principal portions, one of which may be termed the "vehicle" or "carriage" portion, and which consists of the tongue or pole, the wheels, axle, and main frame and seat when used for a riding-tool, and the other portion a cultivating implement, comprising the drag-bar, blades or shovels, handles, and standards.

Instead of securing the cultivating implement to the vehicle by attaching the same to the axle or frame or some adjacent part of such vehicle, and which usually requires two connections, (that is, a connection for each gang of shovels or blades and the drag-bar of such gang,) in the present instance both drag-bars and their gang of shovels are connected to the vehicle at a single point, which, as will be hereinafter set forth, is advantageous in enabling the cultivating implement to be handled readily in accordance with the exigencies of the work it is effecting. A convenient way of accomplishing this single connection is shown in the drawings, and is produced by extending the inner and upper ends of the drag-bars, hinging them together, and joining the two to the tongue or other accessible portion of the main frame of the vehicle by a single universal joint. This universal joint may be constructed by passing a vertical bolt through the tongue or frame of the vehicle and providing such bolt at one end with a loop or eye, in which may play a loop or eye formed in one or both of the two drag-bars, which bars, as aforesaid, are joined or hinged together at or near this point. This eyebolt is designated by the letter O in the drawings, and the eye in the drag-bar is designated by the letter P. The hinged or pivotal connection between the two drag-bars is designated by the letter Q. It is evident that with this construction of joint between the tongue or main frame of the vehicle and cultivating implement the latter may be given a variety of movements, to wit, it may be swung from side to side to avoid blades of corn or ob-



structions; it may be lifted vertically, partially or entirely out of the soil, and, indeed, may be hung or suspended in that position, as will be hereinafter described, and it may  
 5 be tilted or rocked, so as to make the shovels or blades conform to any inequalities in the surface of the ground. In short, the joint described is what is ordinarily termed a "universal joint." The two drag-bars being  
 10 hinged or pivoted at one end must be rigidly connected in some manner at or toward their rear ends, and accordingly there is provided a yoke, consisting of upright and properly-curved bars  $H H'$ , the upper ends of which  
 15 may be adjusted closer together or farther apart in any suitable manner, such as by a grooved bar  $I$ , in which are set-screws, or both, to clamp the members of the yokes. On this grooved connecting-bar may be formed a hook  
 20  $R$ , which is adapted to be hung over and be suspended from the hook  $N$ , constructed on a bracket on the tongue or main frame of the vehicle, whereby, when the cultivator is lifted to a sufficient height and these two hooks engaged, said cultivating implement will be suspended for transportation purposes and avoid the necessity of the operator carrying such implement in its lifted position.

It is of advantage, in connection with this  
 30 construction above described, to employ a single spring or one or more springs acting jointly instead of independently, which shall form a connection between the tongue or frame of the vehicle and the drag-bars of the  
 35 cultivating implement. Of course these springs may be connected between the vehicle and the cultivator implement in a variety of ways, but there is illustrated a manner of connection which has been found efficient and  
 40 advantageous. An eyebolt  $S$  in each of the drag-bars is attached to a chain or rod  $M$ , and the other end of each of said chains or rods is suspended upon the opposite ends of an even-rod  $L$ , which, in turn, is supported  
 45 midway of its ends in a hook or eye formed in a rock bar or lever  $K$ , which latter is connected to one end of one or more of the coiled springs  $J$ , the other end of which is suitably secured to the tongue or frame, and may have  
 50 its tension adjusted in any suitable manner, such as by a bolt or nut, as shown in Figs. 1 and 2 of the drawings.

Two independent springs, acting upon separate and independent drag-bars, have heretofore been employed in cultivators; but I  
 55 am not aware that before my invention a single spring or more springs acting conjointly with a single effect or upon two shovel-gangs connected in one single pivot have been used.  
 60 A single spring or two springs acting conjointly are advantageous, especially in connection with a cultivating implement connected to its carriage by a universal joint, because when the cultivating implement is  
 65 tilted by the operator the spring action will be even and uniform in relation to both drag-bars.

Ordinarily when the cutting implement is in action there is very little pull given by the spring, for the reason that the rock arm or  
 70 lever is depressed, so as to make the spring pull on the dead-center; but when the operator lifts the cultivating implement the spring immediately comes into action and takes up the greater part of the burden. 75

There will next be described the arrangement of the shovels with relation to the drag-bars and to the standards depending from such drag-bars.

Referring to Fig. 1 of the drawings, it will  
 80 be noticed that both of the gangs of shovels incline inwardly, and therefore tend to throw the soil toward the center; but the standards which support such shovels are removably connected to the drag-bars by means of bolts,  
 85 and have their supporting-arms so shaped that they may be readily removed and the pairs on the respective drag-bars exchanged. For instance, the shovel on the outside end of the left-hand drag-bar is secured to the  
 90 inside of the right-hand bar, and the shovel formerly in that position is placed upon the outside of the left-hand drag-bar, and the shovels respectively on the inside of the left-hand drag-bar and the outside of the right-  
 95 hand drag-bar may have their positions exchanged. By thus exchanging the position of the pairs of shovels on the respective drag-bars the relative position of the shovels with respect to the center will be reversed, where-  
 100 by they will throw the soil in an outer direction instead of toward the center. This capacity for exchange of positions is desirable where it is wished to prevent a field of ground from becoming ridged. It is desirable that  
 105 cultivators of this class shall have a capacity for adjusting both the pitch of the cutting edge and also the longitudinal incline of the shovel. The pitch of the cutting edge of the shovel may be adjusted by the construction  
 110 shown in Fig. 4 of the drawings, in which there is shown a wedge  $T$ , placed between the shovel  $G$  and the lower member  $F'$  of the standard, and secured thereto by a bolt  $U$ . This wedge may be reversed, that is to say,  
 115 its blunt portion may be lowest instead of highest, as shown in the drawings, and this reversal of the position of the wedge of course correspondingly changes the pitch of the cutting edge of the shovel, so that it is  
 120 presented to the ground at a greater inclination. As shown in Fig. 3, the shovel is connected to the shank  $F'$ ; but this arrangement may be reversed. The shank or lower member  $F$  of the standard may be provided with  
 125 an elongated slot  $V$ , and a wooden pin  $W$ , passing through a perforation in the lower end of the upper member  $F$  of the standard, may play and be guided in such slot  $V$ . The end of the shank  $F'$  of the shovel may be  
 130 provided with a curved slot  $X$ , which may play upon a bolt  $Y$ , passing through such shank and through an elongated slot  $Z$ , formed in the upper member  $F$  of the stand-



ard. The vertical adjustment of the shovel is provided by the elongated slots V and Z and the pin and bolt playing therein. Inasmuch as the pin W is of wood, if the shovel should strike an obstruction violently such pin would break and the shovel then swing freely on the bolt Y, which is a construction and advantage well known in this class of cultivators.

The inclination of the point of the shovel, that is, the forward end of the same, (in contradistinction to the lower cutting edge,) may be varied by adjustment in the grooved lateral slot X by means of the bolt Y, whereby when the furrow in the soil becomes quite deep the point of the shovel may be adjusted correspondingly, so as to still do its work in hilling effectively.

It is obvious that many modifications or variations may be made in the details of construction shown and described without departing from the principle of the invention, and this is especially true with reference to the single joint between the cultivating implement and the vehicle or carriage and the spring connecting for acting thereon.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a cultivator, the combination with the frame of a vehicle, carrying a bracket, of a pair of drag-bars carrying the shovels and hinged to such frame by a single joint, and a bracing-yoke having a hook adapted to be supported on the bracket of the frame and thus cause a suspension of the cultivating implement while being transported; substantially as and for the purpose set forth.

2. In a cultivator, the combination with the frame of the vehicle, of a cultivating implement joined thereto by a single pivot, and comprising two hinged drag-bars supporting gangs of shovels, and of a spring supported upon the frame of such vehicle and acting evenly upon both of the drag-bars of the cutting implement; substantially as and for the purpose set forth.

3. In a cultivator, the combination with a cultivating implement, comprising two drag-bars carrying gangs of shovels, hinged together at their upper ends, of a vehicle having a frame, and a single pivotal connection between the frame and cultivating implement, and of a single spring supported by said frame and medially connected to the drag-bars; substantially as and for the purpose set forth.

4. In a cultivator, the combination with a cultivating implement, comprising a pair of drag-bars carrying shovels at their lower ends and hinged together at their upper ends, and a vehicle or carriage having a frame jointed

to the cultivating implement by a universal joint, a spring supported upon such frame, a rock-lever connected to one end of the spring, and flexible connections between the rock-lever and the drag-bars; substantially as and for the purpose set forth.

5. In a cultivator, the combination of a cultivating implement, comprising a pair of drag-bars carrying gangs of shovels at their lower ends and hinged together at their upper ends, a vehicle-frame and pivotal universal joint between such frame and cultivating implement, a coiled spring supported upon the frame and adjustably connected at one end thereto, a rock bar or lever, pivoted in the frame and connected to the other end of the spring, an evener-rod carried by the rock bar or lever, and flexible connections from each end of the evener-rod to the respective drag-bars; substantially as and for the purpose set forth.

6. In a cultivator, the combination with a shovel, of a standard composed of two parts, having elongated vertical slots for vertical adjustment, and a lateral slot, and a bolt passing through both the lateral and upper vertical slots, whereby it may effect an adjustment of the height of the blade and the inclination of its point; substantially as and for the purpose set forth.

7. In a cultivator, the combination with two drag-bars having substantially parallel lower ends, with two pairs of movable shovels connected thereto, the upper ends of the standards of the individuals of each pair of shovels being curved toward the front and rear of the machine respectively; whereby the pairs are adapted to be exchanged, and thereby reverse the cutting action of the shovels; substantially as and for the purpose set forth.

8. In a cultivator, the combination with two drag-bars, having substantially parallel lower ends, with two pairs of movable shovels connected thereto, and each pair interchangeable with the other pair, the cutting action of the pairs of shovels being thereby made reversible at will; substantially as and for the purpose set forth.

9. In a cultivator, the combination with the frame of the vehicle, of a cultivating implement pivoted thereto by a single pivot, and a spring upon such frame connected to the cultivating implement; substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand this 30th day of January, 1895.

ALBERT H. SEARS.

In presence of—

M. I. CAVANAGH,  
S. E. DARBY.