W. L. BEALL.

STRADDLE ROW CULTIVATOR.

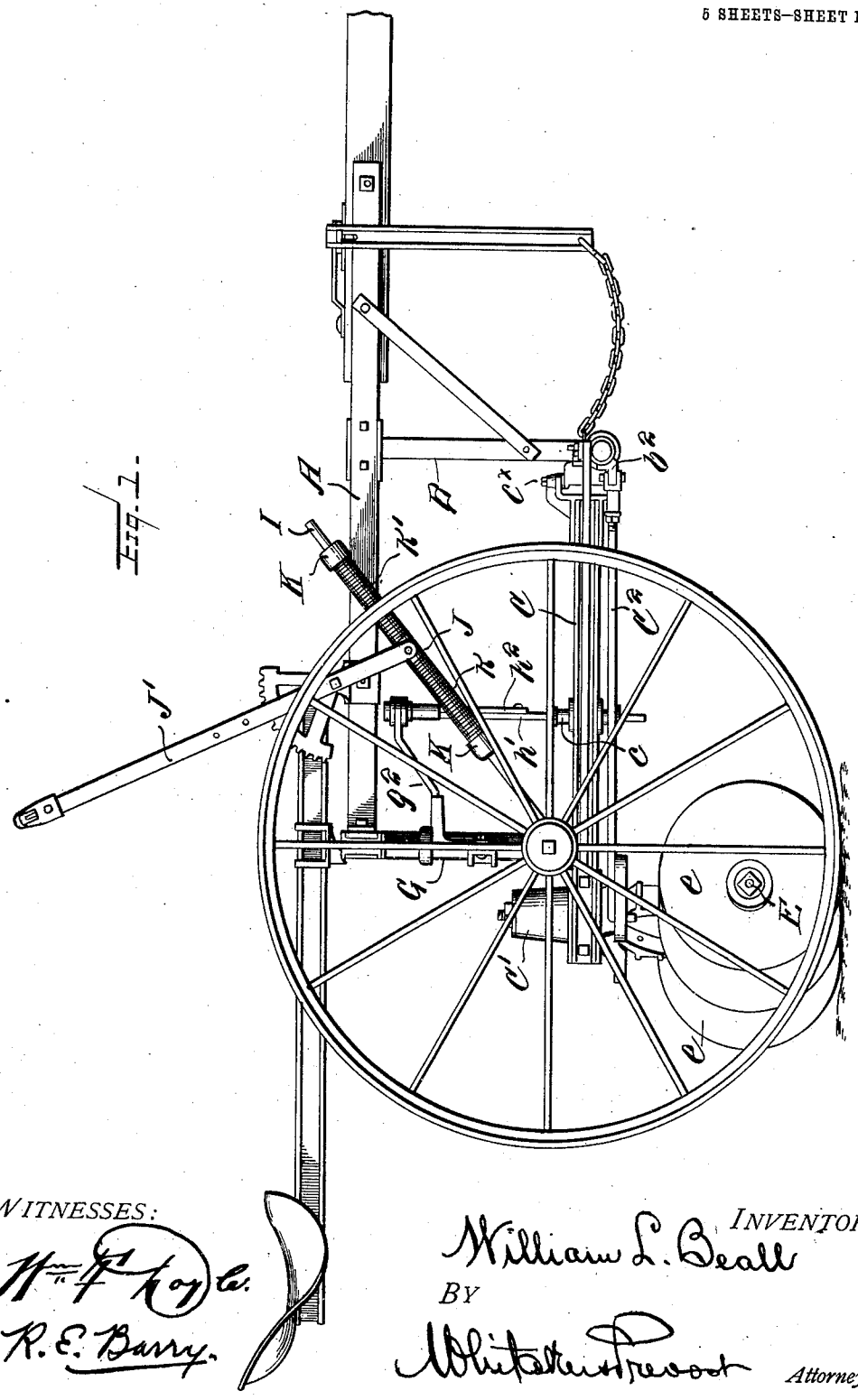
APPLICATION FILED SEPT. 18, 1909.

990,624.

Patented Apr. 25, 1911.

5 SHEETS—SHEET 1.

Fig. 1.



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5 SHEETS—SHEET 2.

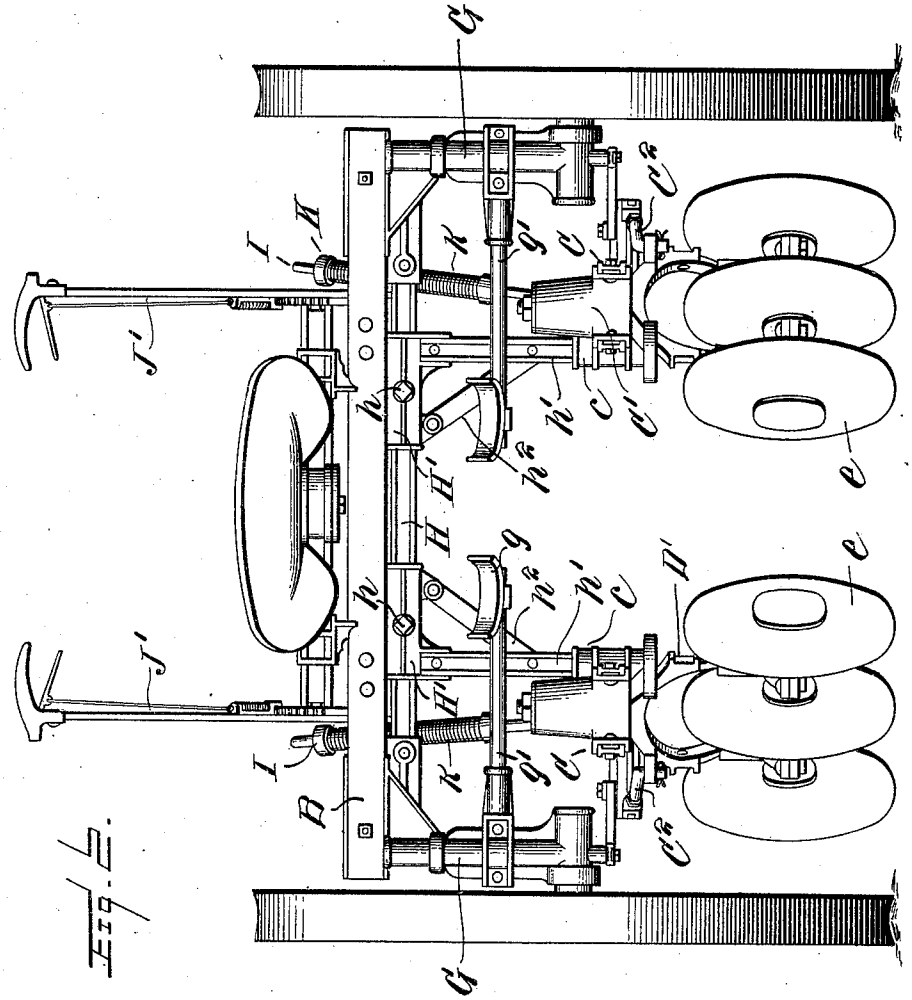

Fig. 2.

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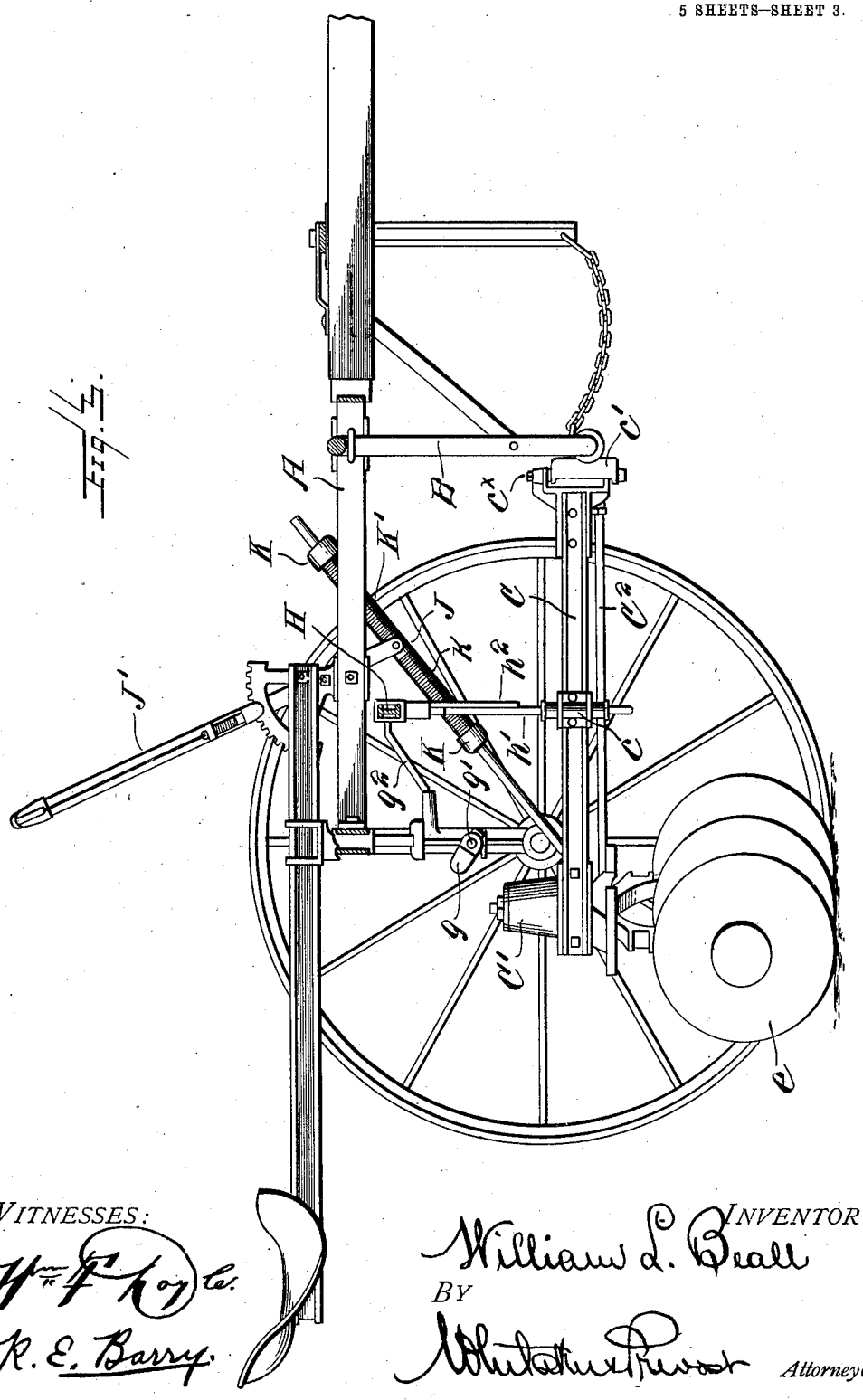
5 SHEETS—SHEET 3.

Fig. 3.



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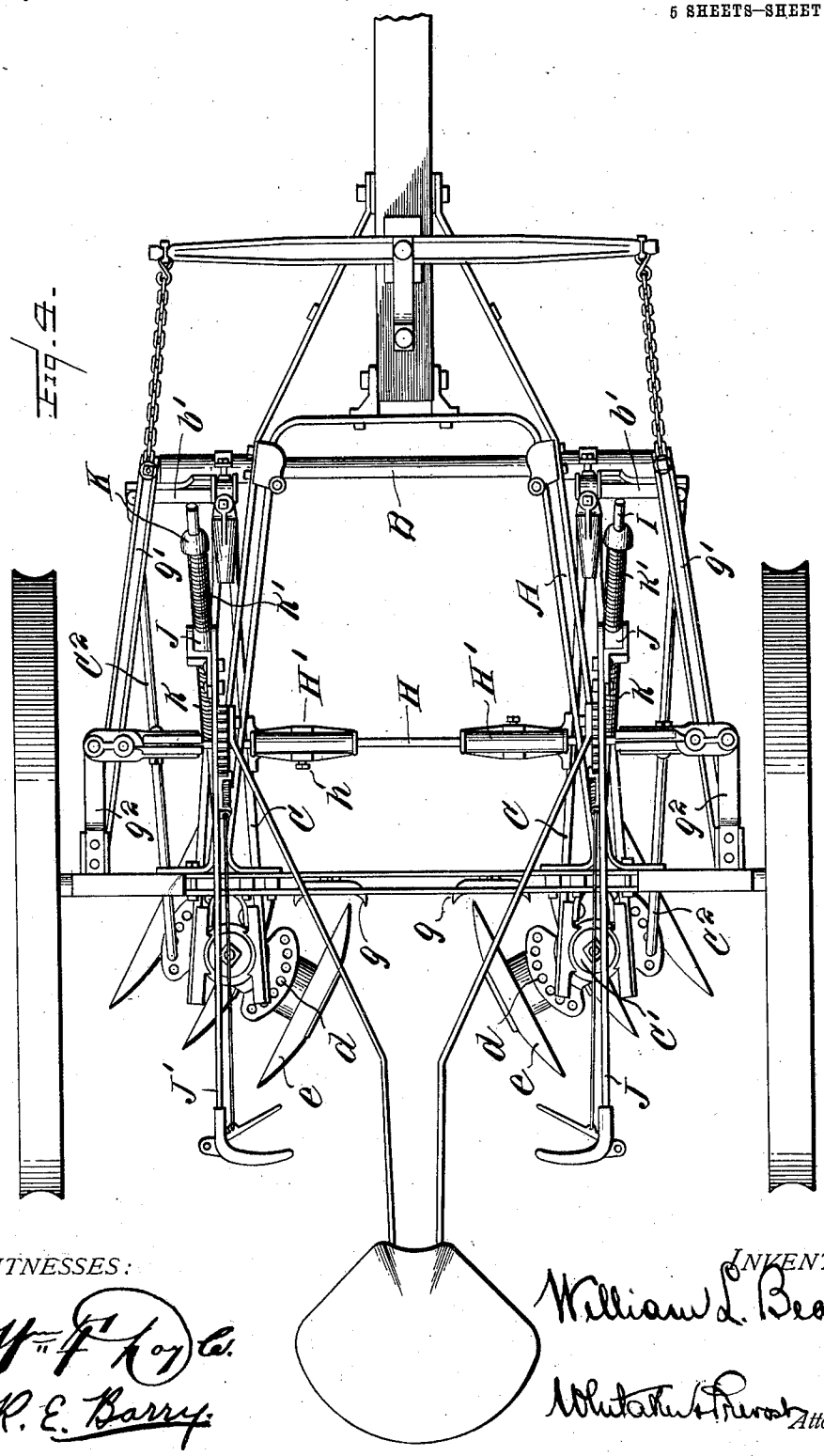
5 SHEETS—SHEET 4.

Fig. 4.



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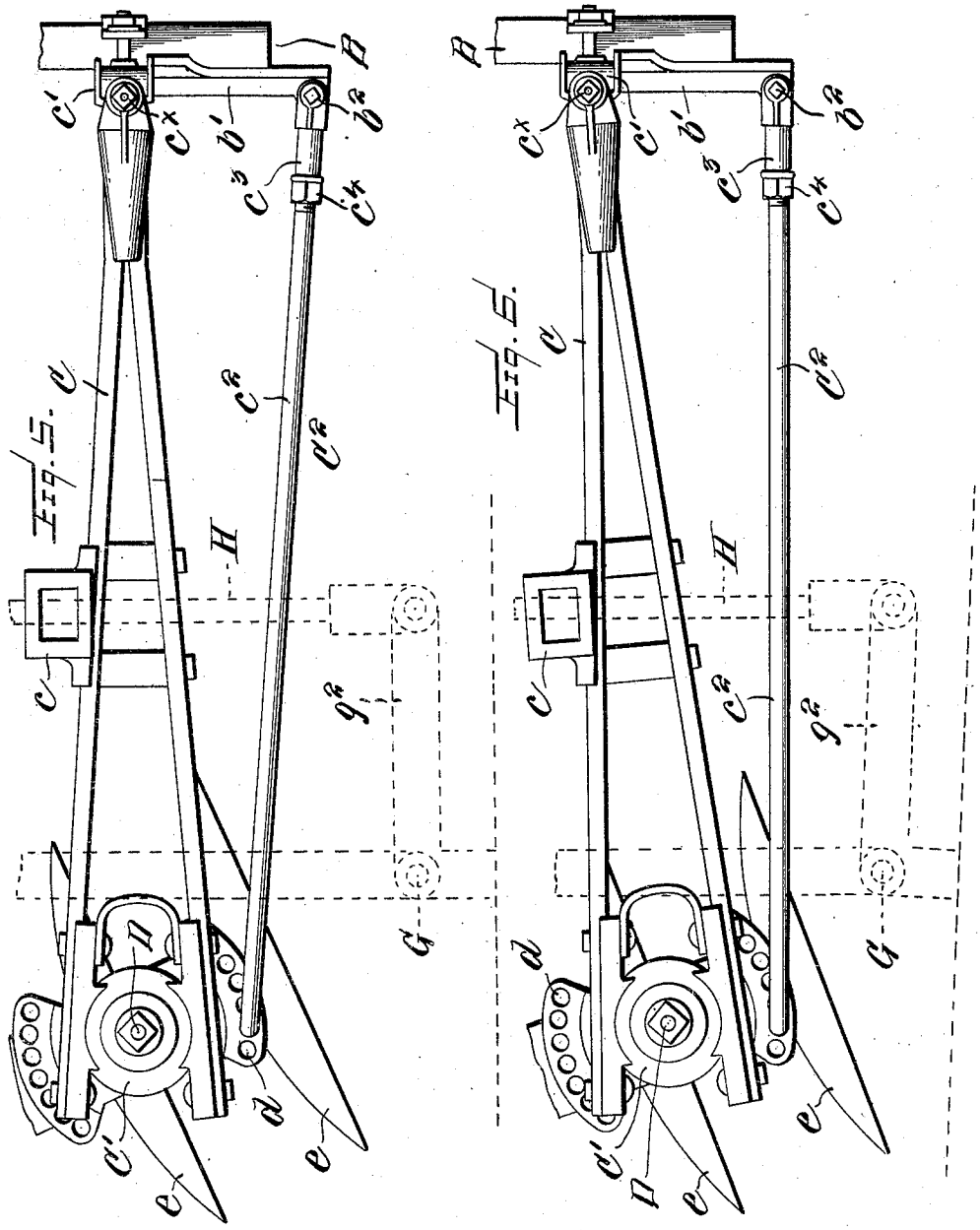
5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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STRADDLE-ROW CULTIVATOR.

990,624. Specification of Letters Patent. **Patented Apr. 25, 1911.**

Application filed September 18, 1909. Serial No. 518,316.

To all whom it may concern:

Be it known that I, WILLIAM L. BEALL, citizen of the United States, residing at Albion, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Straddle-Row Cultivators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to the class of cultivators and more particularly to that form of straddle row cultivators in which the ordinary cultivator teeth or shovels are replaced by concavo-convex disks.

In straddle row cultivators, means are often provided by which the operator riding on the cultivator can control the path of the cultivators by turning the wheels and moving the gangs of teeth or shovels sidewise. In cultivators of the disk type this has been found very difficult in practice owing to the fact that the disks present a large surface resisting a sidewise or lateral movement. By my improvement I overcome this difficulty in a great measure by changing the position of the disks in respect to the line of draft, whereby such resistance is greatly lessened.

In the drawings which accompany this specification, Figure 1 is a side elevation of a cultivator of the class above stated with my improvements embodied therein. Fig. 2 is a view of the same in rear elevation. Fig. 3 is a longitudinal vertical section of same. Fig. 4 is a top or plan view. Figs. 5 and 6 are detail views illustrating the cultivator beam and parts connected therewith.

The construction of the machine and the parts of the same with which my improvements are most intimately connected, will be briefly described in order that the novel features and the operation of the same, may be clearly understood.

A is the main frame and B the arch secured thereto.

C are the cultivator beams having their forward ends connected with the lower horizontal portions of the arch so that the rear ends of same may swing freely in both horizontal and vertical directions. These beams are arranged to be lifted or depressed by hand levers J′, normally held in place by a spring pawl and notched sector in a well known way. The lower end of each of these levers is pivoted to a sleeve J on a bar or rod I pivotally connected with one of the beams or a part secured thereto. On each side of the sleeve are coiled springs k, k' and these springs are held in position by collars K, K, secured to said bar or rod by set screws or in any preferred manner. By depressing or moving said hand levers backward, the beams are raised and by the reverse movement, the beams are depressed and held at the position desired by the force of the spring below the sleeve J.

The cultivator is provided with a seat for the operator and with two stirrups or foot rests, which are connected with the wheels and beams, so that when it is desired to have the cultivator move to the right, pressure by the right foot will turn the wheels and swing the beams to the right, and pressure by the left foot will produce a like movement of the wheels and beams to the left. The instrumentalities for accomplishing these results are the vertical shafts G to which the axles of the wheels are attached and arms g', the inner ends of which carry the stirrups or foot rests g. The shafts G have also each a forwardly extending arm g^2. To the forward ends of these arms is pivotally secured the outer ends of a bar H extending entirely across the machine, and upon this bar are movably mounted sleeves or brackets H′. These sleeves or brackets are each provided with one or more set screws h by which they are secured in the position desired. To each of these sleeves or brackets H′ is secured a depending arm h' braced by the brace h^2. The lower end of these arms extends through sockets c secured to the beams C. The arms h' fit loosely within said sockets and permit the beams to rise and fall in a vertical direction to conform to the ground over which the cultivator may pass and permits the beams to be elevated to raise the disks out of operative position. The said sockets c are made of considerable extent vertically, see Fig. 3, so as to prevent their cramping the arms h' and to enable the arms h' to resist the twisting or torsional effects of the disk gangs upon the beam.

The cultivator beams C are of the form best seen in Figs. 5 and 6. Each beam consists of two parts coming into close relation at their forward ends, where they are se-

cured to the lower horizontal portions of the arch so as to permit the rear ends to swing in both horizontal and vertical directions. The rear ends of the two parts of the beam are secured on opposite sides of a hub C′ which forms a bearing for an upwardly extending shaft D, the lower end of which is provided on each side with an outwardly extending flange having therein a concentric series of holes *d*. To the lower end of these shafts is secured a forked hanger D′ in the lower ends of which is journaled the shaft E carrying two or more concavo-convex disks, a form common in agricultural implements. The working distance of the rear ends of the beams from each other or of the disk gangs from each other, is regulated by the position of the sleeves H′ on the bar or rod H, which are adjusted to suit the crop it is desired to cultivate. The beams C at their forward ends are joined by a vertical pivot $c^{\times}$ to a coupling *c*′ that turns on the lower horizontal portions of the shaft as on a pivot. These couplings have each an outwardly extending arm *b*′ to which is pivoted at b^2 the forward end of a rod or connector C^2 extending rearwardly and having at its rear end a short downwardly extending part or hook to engage the holes *d* in the flange of the shaft D. The lower portion of said downward extension or hook may be provided with an opening for a cotter to hold it securely in place, or it may be threaded and secured by a nut. Disks of the character described, when used to cultivate the ground are set at an angle to the line of draft and when two gangs are employed as in the present instance, they are usually set at angles of opposing directions so that the draw of one gang will be opposite that of the other, as will be seen in the plan view in Fig. 4. In practice the lateral movement of the ordinary cultivator blades is comparatively easy as such blades have only a narrow or cutting edge to resist this movement. When disks are used this lateral movement thereof is resisted by a very broad surface and is of much greater difficulty. This difficulty is greatly reduced by changing the angle of the disks so that the combined draw of the two gangs will tend to move the disks in the direction desired, whereby the disks themselves assist in effecting the lateral movement desired. The normal position of the shaft E and of the disks on the same, is easily adjusted by moving the hook of rod C^2 from one to another of the holes *d* in the flange of the shaft D.

The rod or connector C^2 is preferably composed of two parts c^2, c^3 as shown in Figs. 5 and 6. The forward part c^3 being formed with rear end hollow and interior threaded, and the forward end of the part c^2 exteriorly threaded and screwed into the part c^3. A cramp nut c^4 upon the part c^2 serves to hold the part c^2 securely in the position to which it may be turned. This feature of construction provides for finer adjustment than that provided by the series of holes *d* as by it any position of the disks intermediate of that which will be effected by a change of the hooked end of C^2 from one to the next adjacent hole, can be secured.

It will be seen that in this construction when the beams are swung laterally by the operator the angular position of the disks *c* in respect to the line of draft, will be changed so that the disks themselves will tend to move the beams in the direction desired. It is also to be noted that the distance between the pivots *c* and b^2 is greater than the distance of the holes *d* from the shaft D, so that the shaft E and the disks will, at any such time, be given a greater movement or will be moved from their normal position to a greater degree than the beams will vary from their normal relation to the line of the arch.

The disks are shown in the drawings, see Figs. 2 and 4, as set in position to draw the soil away from the row of plants under cultivation, but they can be set in position to draw the soil toward them. The result of the connections with the arch here described, will be the same and the lateral movement of the disks be rendered much easier and be more fully under the control of the operator than heretofore.

What I claim and desire to secure by Letters Patent is:—

1. In a riding wheel cultivator, the combination with the wheels, the main frame and a beam, of a disk gang connected with said beam, levers to enable the operator to turn the wheels to move the beam to guide said gang and means whereby a movement by the operator to turn the wheels and move the gang laterally in one direction will change the angle of the disks to the line of draft and to the beam to aid the operator in moving the gang in that direction and a movement to turn the wheels in the opposite direction will change the angle of the disks to the line of draft and to the beam to aid in moving the disks in that direction.

2. In a riding disk cultivator, the combination with the wheels, main frame and beams, of a gang of disks pivoted to each beam, levers for enabling the operator to turn the wheels and move the beams laterally to guide the gangs, and means connected with said parts whereby a movement of the wheels and beams to move the gangs in one direction will change the angle of the disks to the line of draft to aid the desired movement, and a movement of the operator in the other direction will change the angle of the disks to the line of draft to aid the movement of the gangs in that direction.

3. In a straddle row cultivator of the disk

type, the combination with the supporting wheels of the beams, disk gangs connected therewith by a vertical pivotal connection, means for turning the wheels to change the direction of movement of the cultivator, and connections therewith whereby the disk gangs are moved with the wheels including means for turning said gangs on their pivots to change the angle of the disks to the line of draft to aid in moving them laterally.

4. In a straddle row cultivator, the combination with the main frame and arch, of pivoted axles and supporting wheels, of beams pivoted to said arch, disk gangs pivoted to said beams, means for turning the pivoted axles to change the direction of the wheels and connected therewith means for varying the angularity of the disks to the line of draft to facilitate the movement of the gangs in the same direction.

5. In a straddle row cultivator of the disk type, the combination with the main frame and arch, of a beam pivoted to said arch, a gang of disks pivoted to said beam, pivoted axles, and supporting wheels, means for changing the position of said wheels and disks in respect to the line of draft, including a further and adjustable connection between said arch and the gang of disks.

6. In a straddle row cultivator, the combination with the main frame having an arch near the front of the same, of pivoted axles and supporting wheels near the rear of said frame, means for turning the wheels to guide the cultivator, a beam pivoted to said arch, a gang of disks pivoted to said beam, connections for causing a change in the position of the disks to the line of draft, when the wheels are turned, and means for adjusting the position of the disks in respect to the wheels consisting of a rod or bar pivoted to said arch and having an adjustable connection with said gang to vary the position of the disks to said wheels.

7. In a wheel straddle row cultivator, the combination with the arch, of a beam pivoted thereto for lateral movement, a gang of disks pivoted to said beam, and a connection extending from the arch at one side of the beam pivot to the gang at the same side of the gang pivot, the distance between the arch pivots being greater than that between the gang pivots.

8. In a straddle row cultivator, the combination with a main frame and supporting wheels, of a beam pivoted for lateral movement, a gang of disks pivoted to said beam, means for enabling the operator to turn the wheels to secure lateral movement of the cultivator, a connection pivoted to the same part as that to which the beam is pivoted, and having a pivotal connection with the gang, said connection lying at one side of said beam, and means for varying the length of said connection to adjust the position of the disk in relation to said wheels.

9. In a straddle row cultivator, the combination with the arch, of a beam pivoted thereto, for lateral movement, a gang of disks pivoted to said beam and having connected therewith a flange having a series of holes, supporting wheels and means for turning said wheels to guide the cultivator, and connections with the gangs to vary the positions of the disks to the line of draft by the movement of the wheels, a rod connected with the arch at one side of the beam pivot, and adapted to engage the holes in said flange, for adjusting the position of said disks, and a means for varying the length of said rod for fine adjustments.

10. In a straddle row cultivator, the combination with a main frame, of two beams adapted to move freely in both a lateral and vertical direction, a disk gang pivoted to each beam, pivoted axles and supporting wheels, stirrup arms for controlling said axles and wheels, and connections for varying the position of the disks to the line of draft when the wheels are turned, and means for raising the gangs independently of each other.

11. In a straddle row wheel cultivator, the combination with the main frame and an arch separate therefrom, of a beam, a gang of disks secured to said beam, said beam being pivoted to said arch for lateral and vertical movement of said disk gang, a vertically disposed socket on said beam, a bar movable endwise transversely of said main frame and an arm depending therefrom and loosely engaging said socket, said socket being of considerable extent in a vertical direction to resist the twisting or torsional effect of the disks upon the beam.

In testimony whereof I affix my signature, in the presence of two witnesses.

WILLIAM L. BEALL.

Witnesses:
A. J. BROSSEAU,
MARY L. DEAN.