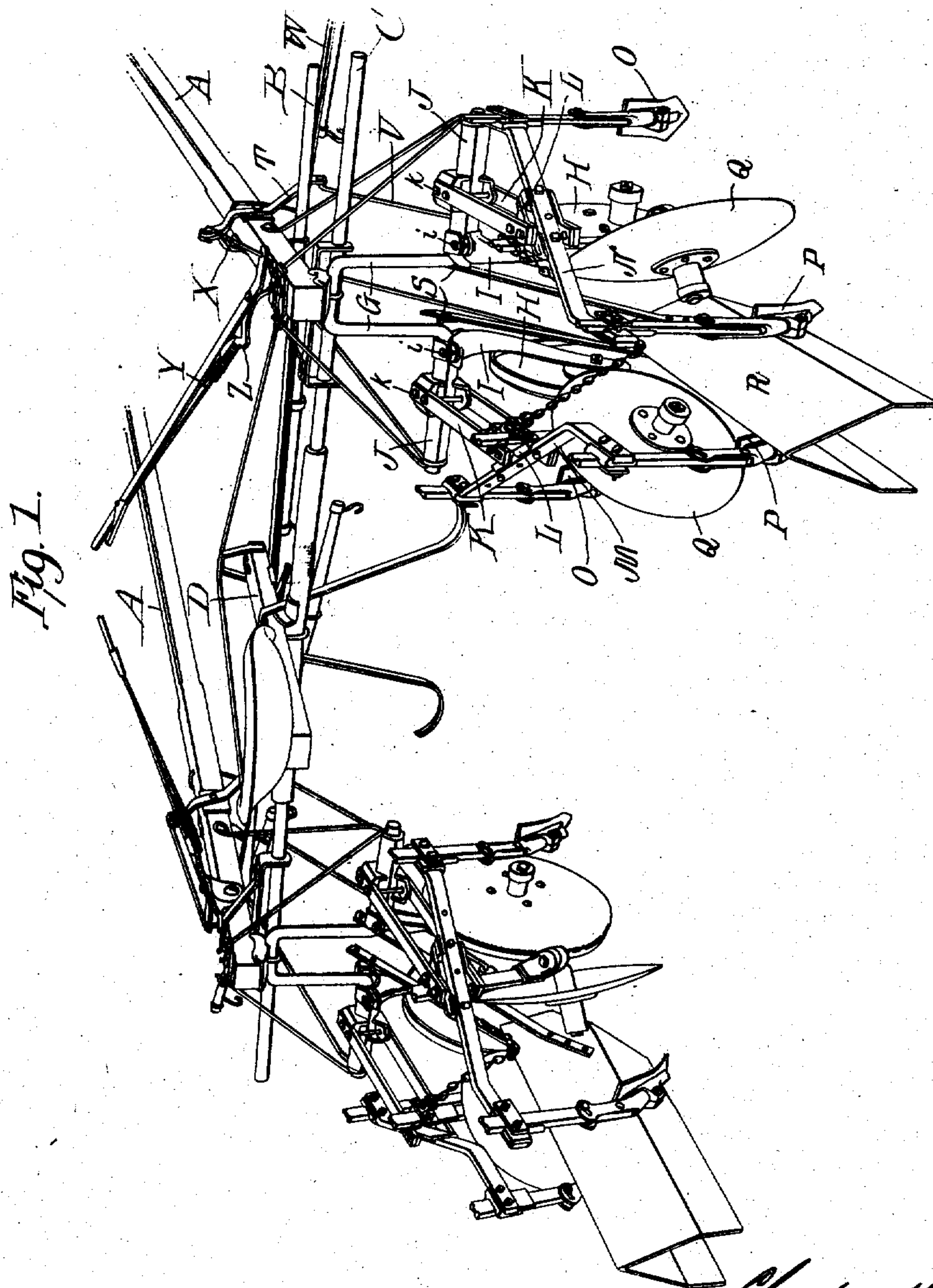


No. 868,107.

PATENTED OCT. 15, 1907.

C. H. MELVIN.
LISTER CULTIVATOR.
APPLICATION FILED DEC. 27, 1905.

7 SHEETS—SHEET 1.



Witnesses

Chas. Holmes
Wm. B. Bunde

Inventor

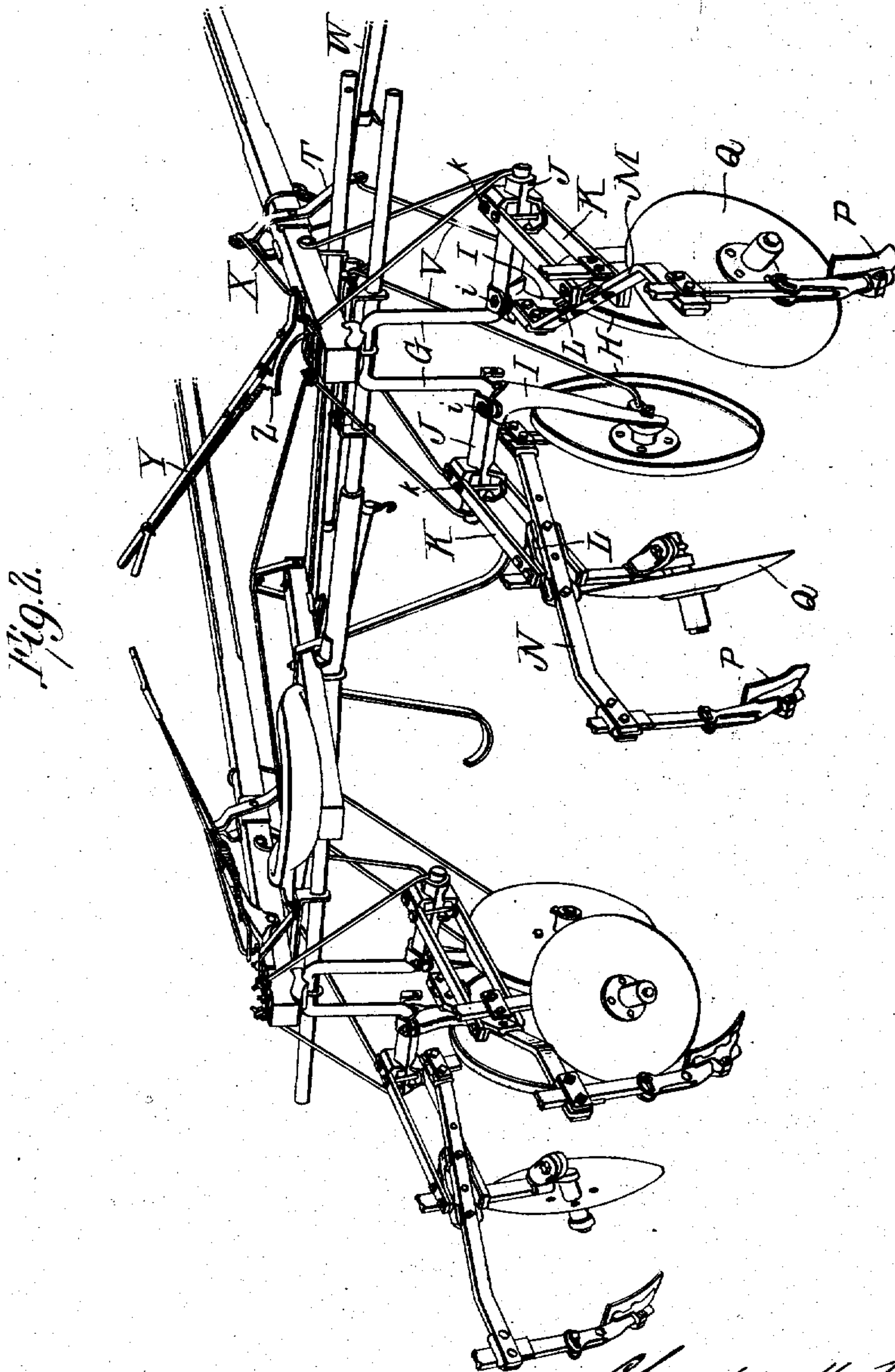
Charles H. Melvin
By *John C. Stewart*
his Attorney.

No. 868,107.

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7 SHEETS—SHEET 2.



Witnesses

W. Holmes
W. Burdine

Inventor

Charles H. Melvin
By *Arthur C. Powell*
his Attorney

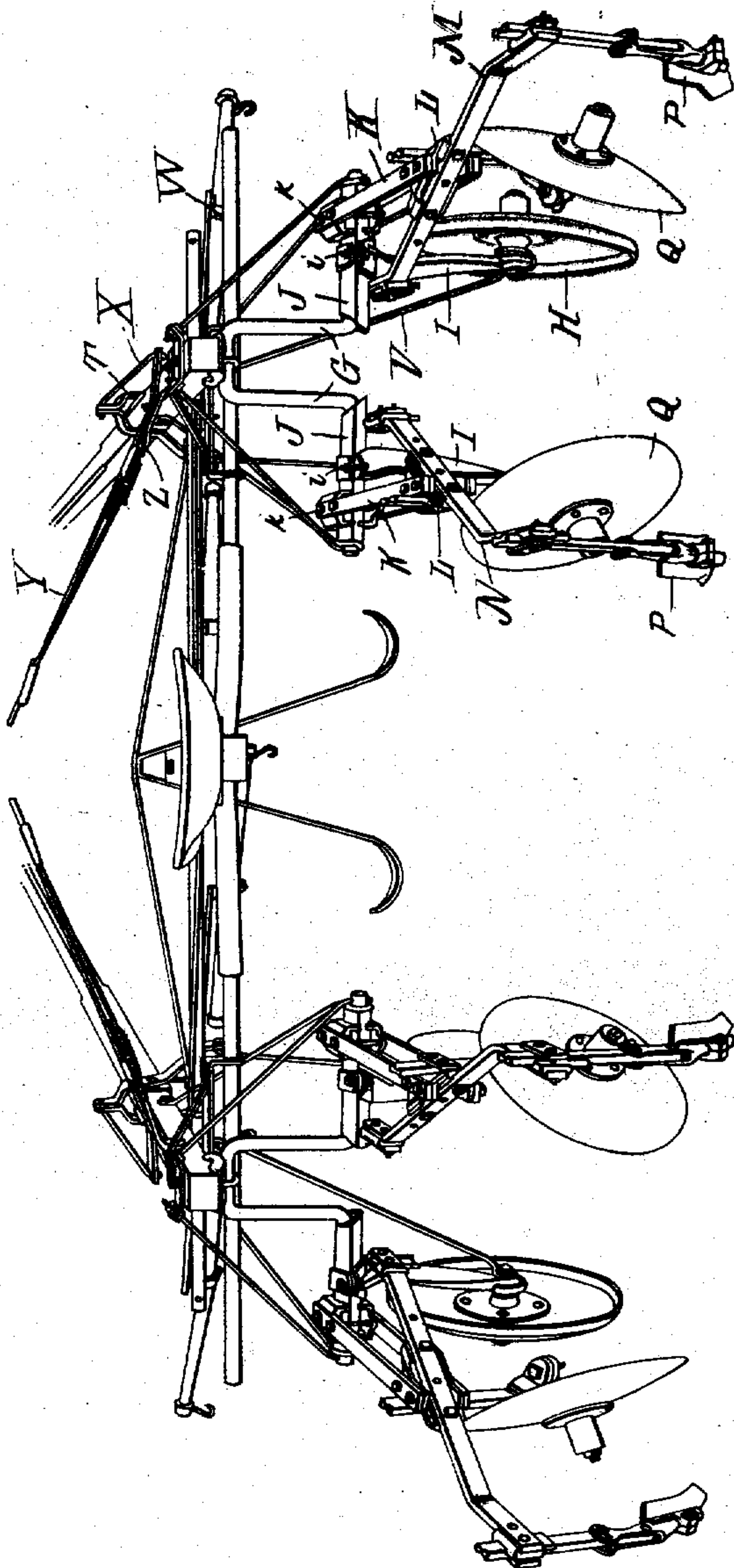
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7 SHEETS—SHEET 3.

Fig. 3.



Witnesses

C. W. Holmes
W. B. Burdette

Inventor

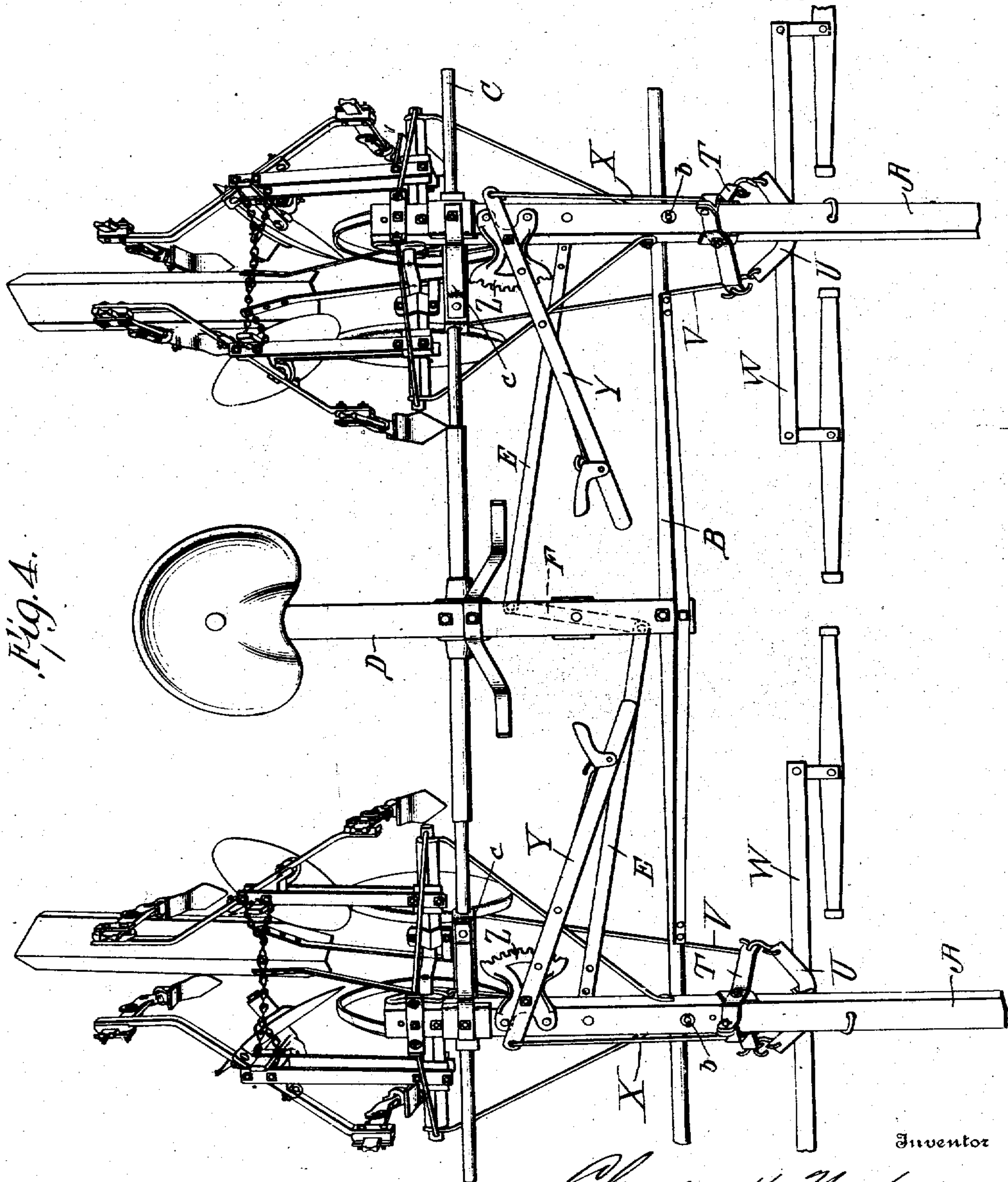
Charles H. Melvin
By *John C. Burdette*
his Attorney.

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7 SHEETS—SHEET 4.



Witnesses

W. Holmes
W. Burdette

Inventor

Charles H. Melvin
By *Julian C. Powell* *Thom*
his Attorneys

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7 SHEETS—SHEET 5.

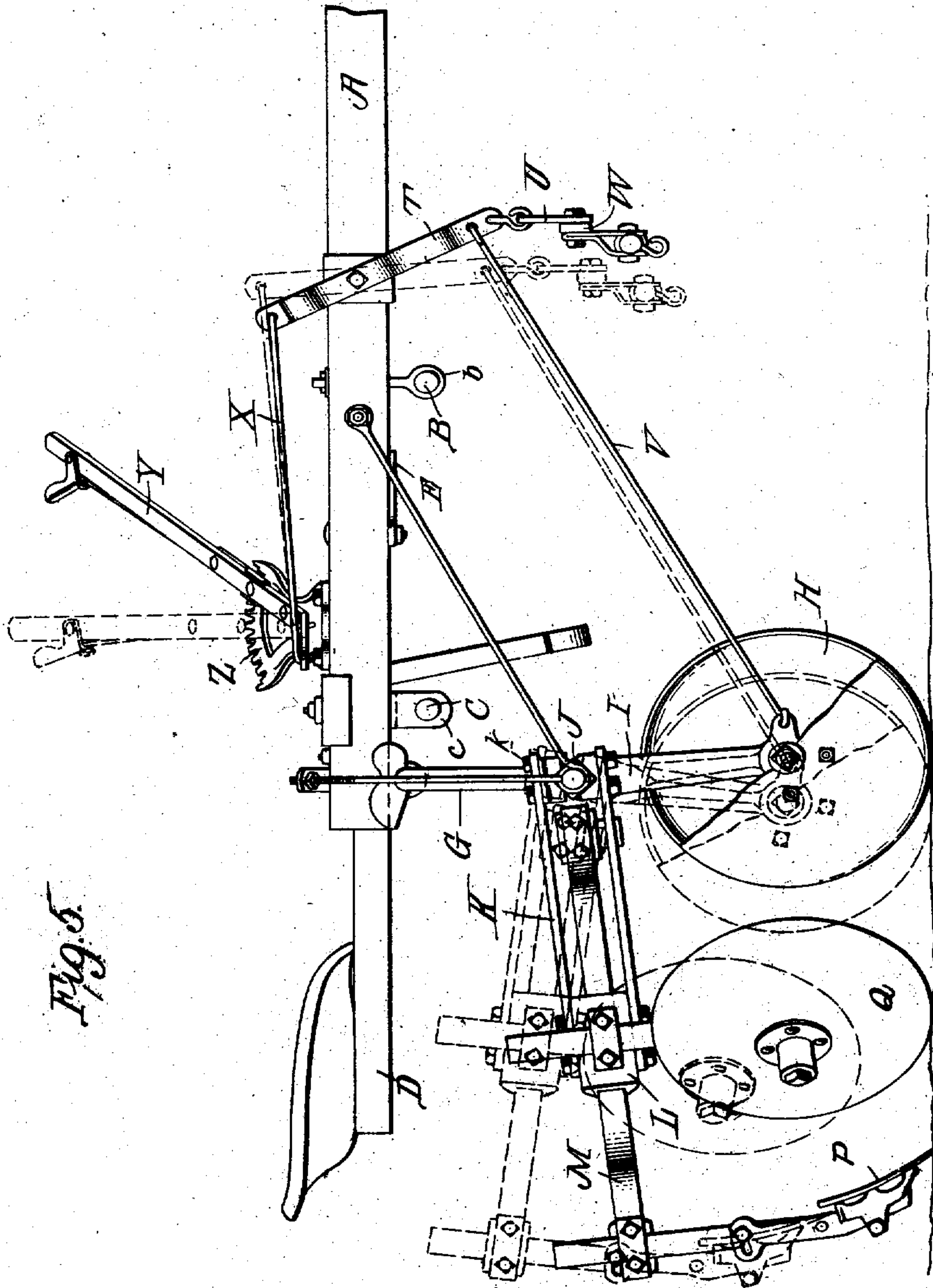


Fig. 5.

Witnesses

Chas. Holmes
Chas. Burdett

Inventor

Charles H. Melvin
by *William C. Powell* *Thos. H. Powell*
Attorneys.

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C. H. MELVIN.
LISTER CULTIVATOR.
APPLICATION FILED DEC. 27, 1905.

7 SHEETS—SHEET 6.

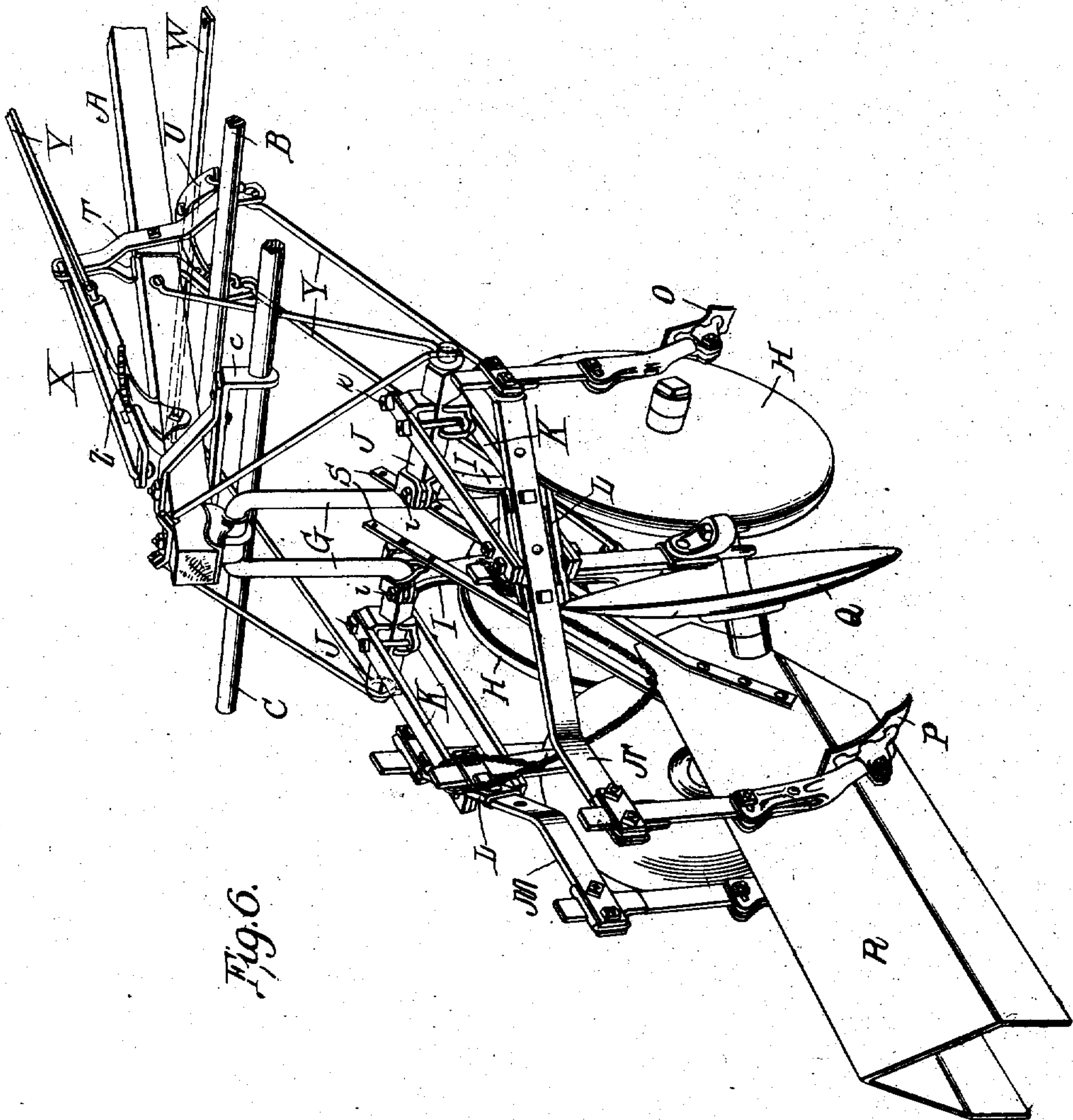


Fig. 6.

Witnesses

Chas. Holmes
Edw. B. Buelme.

Inventor

Charles H. Melvin
334 *Julian C. Burt*
his Attorney.

No. 868,107.

PATENTED OCT. 15, 1907.

C. H. MELVIN.
LISTER CULTIVATOR.
APPLICATION FILED DEC. 27, 1905.

7 SHEETS—SHEET 7.

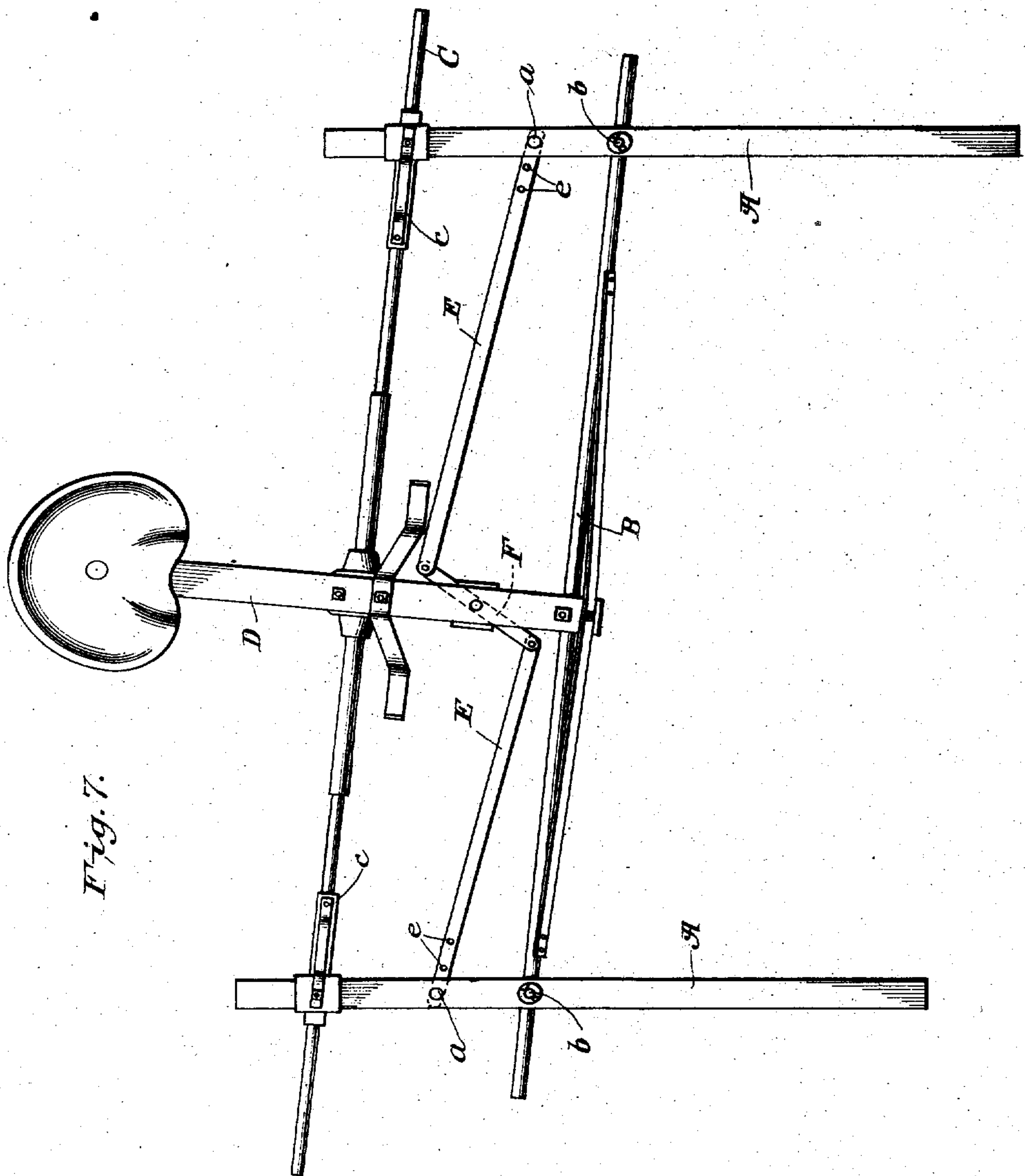


Fig. 7.

Witnesses

M. C. Lyddane

Edward R. Whitman

Inventor

Charles H. Melvin

By Melvin C. Powell For

his Attorney.

UNITED STATES PATENT OFFICE

CHARLES H. MELVIN, OF MOLINE, ILLINOIS, ASSIGNOR TO DEERE & COMPANY, OF MOLINE, ILLINOIS, A CORPORATION OF ILLINOIS.

LISTER-CULTIVATOR.

No. 868,107.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed December 27, 1906, Serial No. 293,544.

To all whom it may concern:

Be it known that I, CHARLES H. MELVIN, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Lister-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.

10 This invention relates to cultivators of the class used more particularly for working listed corn. That is corn planted in furrows or trenches with ridges on opposite sides of the furrow.

15 The objects are to improve the general construction and increase the efficiency of operation of implements of this character, enlarge their capacity for usefulness and for adjustments to meet the requirements of varying conditions of the growth; and to utilize the pull of the team in holding the implement in balance and the 20 cultivating devices down in the soil.

With these and other objects in view the invention will be fully described with reference to the accompanying drawings, which form a part of this specification, and then will be more particularly defined and 25 pointed out in the appended claims.

In said drawings Figure 1 is a rear perspective view showing the implement arranged for the first operation of cultivating young corn. Fig. 2 is a similar view showing the implement arranged for the second cultivation of the corn after it has reached a larger and more 30 hardy growth. Fig. 3 is a back view of the implement shown arranged for the third cultivation of the corn after the plants have attained a more considerable height, this being the last cultivation after which the 35 plants are left to mature and yield. Fig. 4 is a top plan view of the implement arranged as in Fig. 1. Fig. 5 is a side view of the same. Fig. 6 is an enlarged perspective view of one pair of guiding and supporting wheels and associated set of cultivating devices. Fig. 7 is a 40 top plan view of only the main frame-work of the implement, showing one side drawn a little ahead of the other.

The drawings represent the invention embodied in a two-row implement, comprising two flexibly connected 45 or laterally movable sets of cultivating devices, each arranged to straddle a row, so that in operation the opposite pairs of rigs are free to move in and out to conform to variations in the width or distance between the rows or furrows.

50 A particular explanation of the illustrated machine is as follows:—The tongues or draft-poles A are respectively mounted on the opposite pairs of supporting and guiding wheels and carry the trailing sets of cultivating devices or pairs of rigs for working on opposite sides of 55 the rows. These tongues A are attached to the cross-

bars B and C of the seat-frame in such manner as to allow a pivotal movement between the tongues and seat-frame and also to permit the tongues to move laterally on the cross-bars. For this purpose, the tongues are shown in Figs. 4, 5 and 7 connected to the cross-bars B 60 by the swivel eye-bolts b, which are slidable on rod B while pivotal in tongues A. The rear ends of the tongues are bolted or otherwise pivotally attached to the movable frames or slides c on the rear cross-bar C. In other words, each tongue A is both pivotally and 65 slidably connected to the bars B and C. The cross-bars B and C of the seat-frame are also bolted or attached to a middle beam or seat-bar D, supporting the driver's seat. In this way one pair of cultivating rigs can be pulled ahead or follow behind the other to a certain ex- 70 tent, say to twelve or thirteen inches, and the rigs will still function properly; though under ordinary conditions the movement of one team ahead of the other would amount only to a few inches. As shown in Fig. 7, the cross-rods will remain parallel, while the beam D 75 with the driver's seat will be turned around with the frame a little to the right or left, as the case may be, the seat-bar D being preferably bolted rigidly to said cross-rods. In practice this position can be assumed without difficulty by virtue of the usual slight play or relative 80 motion allowed by the connections between the parts. Between the cross-bars, the links E pivotally connect the tongues A to the opposite arms of a lever F, which is medially fulcrumed or pivoted on the seat-bar D. This forces the tongues and rigs attached thereto to move lat- 85 erally in and out at opposite sides of the machine at the same time, the rigs being always free to telescope or move in and out the limit allowed by the links E. The outer ends of said links E are provided with a plurality of bolt-holes e for adjusting purposes. By means of the 90 links and medial lever F, it is possible to hold the opposite pairs of rigs or sets of cultivating devices rigidly apart, as when cultivating checked corn to which this implement is also applicable. To do this, the bolts a which connect the tongues A and links E are taken out, 95 and the opposite sets of rigs are drawn close together, and the bolts are then inserted through the proper inner holes.

As before stated, the tongues A are respectively attached to the opposite sets of supporting wheels and 100 cultivating devices. Rigidly attached to the rear end of each tongue A is a depending arch or yoke G, mounted upon the pair of solid-faced guiding and supporting wheels H, and carrying one of the sets of cultivating devices or pairs of rigs for working at op- 105 posite sides of a row. Said arch or yoke G is adapted to straddle the row of plants, and its legs are bent outward to provide horizontal arms on which the rig-frames and wheel-standards are mounted to pivot or swing up and down. For this purpose, hollow bars 110

or sleeves J, which are square or angular in exterior shape, are rotatably fitted on said horizontal arms of the arch G; and the wheel-standards I and rig-frames K are each independently bolted, clamped or otherwise rigidly but adjustably attached to said sleeves. As shown, the wheel-standards I are provided at their upper ends with clips or clamps i embracing the sleeves J; and the rig-frames K comprising parallel straps or bars are likewise attached to said sleeves J by the clamps k. Thus both wheels H and both rigs or cultivator-gangs can be independently adjusted laterally or along the lengths of sleeves J. Said rig-frames K extend rearwardly from sleeves J to blocks L, which are bolted between the bars or straps of said rig-frames. To these blocks L are adjustably bolted or attached the oppositely-inclined bars or shovel-beams M and N arranged at opposite sides of the row, each carrying a front cultivator-blade or shovel O and a rear cultivator-blade or shovel P; the shanks or posts of the shovels being suitably bolted to said bars M and N to hold the blades or shovels rigid. Between each pair of cultivator-blades or shovels is a medial cultivator-disk Q, whose supporting standard is bolted to the respective blocks L. The disks are shown inclined to the direction of travel of the team corresponding to the inclination of their respective shovel-beams M or N. The two rigs or gangs of cultivating devices are interchangeable and adapted to be transposed from side to side of the row for the purpose explained later. This is most conveniently accomplished by unbolting the bars of the rig-frames K from the blocks L, and transposing to opposite sides the shovel-beams M and N with the blades and disks respectively attached thereto, and then again bolting said bars K to the blocks L of the transposed rigs. Such transposition may also be accomplished by unbolting the clamps k, and interchanging the whole rig-frames with the rigs or gangs attached thereto; or by detaching and transposing the shovel-beams M and N alone, and detaching and transposing the disks Q to correspond. In Figs. 1 and 4, the rigs are shown with the disks Q arranged to throw the soil outwardly from opposite sides of the row and the inclined bars or shovel-beams M and N converging rearwardly, placing the front cultivator-blades O farthest apart and the rear cultivator-blades P close to the sides of the plants. In Figs. 2 and 3 the rigs are shown transposed, the disks being arranged to throw inwardly toward the row, and the shovel-beams M and N converging toward the front, placing the rear cultivator-blades P at a distance from the plants. It will be observed that the whole set of cultivating devices are divided by the high arch G, which rides over the tops of the plants without liability of injuring them, trailing the cultivators at opposite sides of the row, and each rig or gang of cultivators, comprising the rig-frame K, block L, shovel-beam M or N, with cultivating devices attached thereto, constitutes a rigid structure trailing from and pivotally-mounted on a horizontal arm of the arch, adapting the rig or gang to move up or down.

In connection with each set of cultivating devices or pair of rigs, a sheet-iron fender or shield R may be employed, over the young plants between the rear cultivator-blades P for protecting the tender shoots of

corn from clods of dirt thrown by the cultivators in the early cultivation of the corn. The said shields R, shown in Figs. 1 and 4, slide on the soil and are drawn by the draft-rods S whose forward ends are suitably attached to the sleeves J on the horizontal arms of the arches.

Pivotally-attached to each tongue or draft-pole A, preferably in front of the seat-frame, is a straddling forked strap or bi-branched lever T, whose lower ends under the tongue are connected by the curved link U to the whiffletree W, to which the horses are hitched. Said lower ends of forked lever T are also connected by the draft-rods V to the lower parts of the wheel-standards or brackets I, so that by means of the under hitch the pull of the team holds the wheels and the rigs in proper relation to the seat-frame, the implement being in balance as it were, and the draft tends to revolve the rigs on the horizontal arms of the arch and thereby pull the rear cultivating shovel and disk into the ground. The upper end of said forked lever T is connected by the rod or link X to lever Y, having the usual locking means for engaging the segmental rack Z on the tongue. The levers Y of both tongues extend inwardly within range of the driver's seat, so that the driver can operate either one or both levers to rock the forked strap or bi-branched lever T and thereby raise the cultivator-disks or rear cultivator-blades or shovels as indicated by dotted lines in Fig. 5. While each pair of rigs can thus be lifted together, it will also be noted that the construction affords independent motion for each individual rig, since each rig or gang of cultivating devices is pivotally mounted on one arm of the arch, thus allowing a certain flexure of the cultivating devices, as is very desirable in implements of this nature, on account of the obstructions and inequalities in the soil.

With this description in mind, it will suffice to describe briefly the use of the implement in the several cultivations of listed corn at various stages of the growth. It is understood that listed corn is planted in the bottom of the furrow or trench, and when so planted there is besides the walls of the furrow itself a ridge on each side of the furrow.

After the corn is planted, the first operation is to destroy the weeds which spring up in the furrow and on the sides of the ridges when the corn is in its earliest stages of growth, the plants being from two to five inches in height. During this operation, the plants being tender and easily injured or destroyed, they must be protected from the clods of dirt which are thrown by the cultivator-blades and which might otherwise cover up and break down the tender shoots. With this understanding, Fig. 1 shows the implement arranged for the first cultivation. It is equipped with the fenders or shields R which travel with the implement over the rows which are being cultivated, between the pairs of cultivating devices, and protect the young corn plants. The implement is arranged with its disks Q throwing outward, and the rig-beams M and N inclined rearwardly, supporting the front cultivator-blades O and bringing the rear cultivator-blades P close beside the shields. The front solid-faced guiding disk-wheels travel in the bottom of the furrow against the sides thereof and thus guide the travel of the rigs and the blades which do the culti-

vating work. The functions of these blades are as follows: The rear cultivating-blades P, located on either side of the shields and close thereto, stir up the soil in the furrow and destroy any weeds or foreign growths. The disks somewhat higher scrape off the sides of the ridges to a slight depth, throwing the surface a little further away from the furrow, and destroying the weeds. The front cultivating-blades O travel as near as may be on the top of the ridges and thoroughly stir up this portion and destroy all growths thereon.

The second cultivation occurs after the plants have become hardy enough not to need the protection of the shields R, which are therefore dispensed with. For this cultivation, the implement is arranged as in Fig. 2.

The rigs or cultivator-gangs are transposed, and the front cultivator-blades O are left off. In this operation, the front guiding wheels H still travel inside of the furrow walls. The rear cultivating-blades P, which by transposition of the rigs are thrown farther apart, travel on the tops of the ridges, while the disks Q travel practically on the original surfaces of the ground and slice off portions of the ridges and throw these into the furrows, leaving the furrows about half full, more or less.

The third cultivation takes place at a later stage of the growth, after which the plants are left to ripen. In this third operation, the implement is arranged as in Fig. 3. The rigs retain the same general positions as for the second operation, but are spread apart as far as possible, and the guiding wheels H are also arranged farther apart. The guiding wheels now travel along grooves made by the disks in the second operation, and are no longer confined to the original furrow. The disks take all of the remainder of the ridges and throw these to the corn, leaving the dirt hilled up four or five inches against the corn and the surface on the sides at practically its original level, this surface being thoroughly stirred by the rear cultivating blades.

It is understood of course that the foregoing explanation is made with reference to the particular utility for which the implement is intended, but without essential limitation thereto, the implement being capable of use for other cultivating purposes, and also susceptible of modification in details of construction and arrangement without departing from the scope of this invention.

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

1. In a cultivator, the combination with a draft tongue, of a rigidly attached depending arch or yoke adapted to straddle a row and have its lower portions provided with outwardly-projecting arms, sleeves mounted on said arms and capable of turning thereon, supporting wheels whose standards are rigidly secured to said sleeves, and trailing cultivator-rigs whose carrying-members are secured to said sleeves.

2. In a cultivator, the combination with a seat-frame or main frame of the implement, of a depending supporting arch or yoke therefor adapted to straddle a row and having outwardly-projecting arms, sleeves mounted on said arms and capable of turning thereon, supporting wheels and standards therefor rigidly and adjustably attached to said sleeves, and trailing cultivator-rigs and carrying-members therefor rigidly and adjustably attached to said sleeves, said standards and carrying-members being independently attached.

3. In a cultivator, the combination of a frame including a supporting yoke therefor, said yoke adapted to straddle a row and having its lower portions bent outwardly to pro-

vide spindles, sleeves rotatably-fitted on said spindles, wheel-carrying standards having their upper ends rigidly clamped to said sleeves, trailing cultivator-rigs comprising interchangeable oppositely-inclined beams carrying cultivating-devices, and rig-frames or members having their forward ends rigidly clamped on said sleeves.

4. In a cultivator, the combination of a wheel-supported frame having lateral arms, sleeves rotatably fitted on said arms, trailing rig-frames having at their front ends suitable clamps rigidly attached on said sleeves, said rig-frames carrying at their rear ends blocks with oppositely inclined lateral faces, and interchangeable shovel-beams bolted to said blocks on the said inclined-faces thereof, said shovel beams carrying cultivating devices respectively adapted for working opposite sides of a row.

5. In a cultivator, the combination with the cultivator-frame of a pair of interchangeable cultivator-rigs arranged for working opposite sides of a row and comprising oppositely inclined beams or bars adapted to be transposed and respectively equipped with front and rear cultivator-blades or shovels and an intermediate disk, said disk facing the direction of forward inclination of the beam.

6. In a cultivator, the combination of a wheel-supported frame, a draft-tongue, a draft or hitch device pivotally-connected to said tongue, a trailing cultivator-rig pivotally-attached to the frame to permit up and down motion of the cultivating devices, and link connections between said rig and hitch device whereby the pull of the team forces the cultivating devices down into the soil, and a lever connected to said hitch-device for actuating the same reversely to the direction of said pull.

7. In a cultivator, the combination of a wheel-supported frame, draft-tongue therefor, trailing cultivator-devices whose carrying-frame is pivotally-attached to said wheel-supported frame, and a hitch-device intermediately pivoted to said tongue and connected to the cultivator carrying-frame, in such manner that the pull of the team in drawing the implement forward also forces down the cultivating devices into the ground, and a lever connected to said hitch device for actuating the same reversely to the direction of said pull.

8. In a cultivator, the combination of a wheel-supported arched frame or yoke having lateral arms, sleeves turnable on said arms, standards depending rigidly from said sleeves having the wheels attached thereto, cultivator-rigs whose carrying-members are rigidly attached to said sleeves, a draft-tongue, means for independently adjusting said standards and carrying-members on said sleeves a movable hitch-device pivotally-attached to said tongue, and connections between said device and the wheel-standards adapted to be pulled forward by the pull of the team.

9. In a cultivator, the combination of a wheel-supported arched frame or yoke having lateral arms, sleeves turnable on said arms, standards depending rigidly from said sleeves having the wheels attached thereto, cultivator-rigs whose carrying-members are rigidly attached to said sleeves, a draft-tongue, a forked or bi-branched lever straddling the tongue and pivotally-attached thereto, the lower arms of said lever adapted for hitching the team thereto, and draft-rods connecting said lower arms to the wheel-standards, a lever fulcrumed on the tongue, and a rod connecting said lever to the upper arm of said forked lever.

10. In a cultivator, the combination of a wheel-supported frame, a trailing set of cultivator-rigs pivotally-attached to said frame, a draft-tongue, a hitch-device movably connected thereto, link connection between said device and said cultivating-rig, and a lifting lever fulcrumed on the frame and connected to said hitch-device.

11. In a cultivator, the combination of two flexibly-connected tongues, a seat-frame comprising two parallel cross-bars and an intermediate seat-bar attached to and connecting them, both tongues being slidably and pivotally connected to both cross-bars, and two sets of cultivating devices whose carrying frames are rigidly attached to the respective tongues.

12. In a cultivator, the combination of a transverse seat-frame, a pair of flexibly-connected tongues, depending yokes rigidly attached to said tongues, wheels supporting said yokes, each pair of wheels arranged to straddle a row, the depending legs of said yokes having out-

wardly-projecting spindles, sleeves journaled on said spindles, and two sets of cultivating devices each arranged to operate on opposite sides of the respective row, each set comprising interchangeable trailing rigs attached to the sleeves at the opposite sides of the respective yoke.

13. In a cultivator, the combination of a wheel-supported frame, wheel-carrying standards and trailing cultivator-rigs, said wheel-standards together with the cultivator-rigs adapted to be moved backward relative to the frame for elevating the cultivating devices, a draft-tongue, a forked lever straddling said tongue, a hitch-device connected to the legs of said lever below the tongue, links connecting said legs of the forked lever with the wheel-standards, a manipulating lever mounted on the frame, and a rod connecting said lever and the forked lever above the tongue.

14. In a cultivator, the combination of wheel-carrying standards, a frame mounted thereon and to which said standards are pivotally-attached in such manner as to permit the supporting-wheels to be swung backward relative to the frame, trailing cultivator rigs rigid with said standards, a relatively-movable hitch-device, link-connections between said hitch-device and wheel-standards whereby the implement is held in balance and the cultivating devices in the soil by the pull of the team, and a lever connected with said link-connections for moving back the wheel-standards and thereby lifting the cultivating-devices.

15. In a cultivator, the combination of a tongue, a depending yoke on which said tongue is mounted, the legs of said yoke having lower lateral extensions, sleeves on said extensions, depending wheel-standards and trailing cultivator-rigs attached rigidly on said sleeves, the arrangement being such that the wheel-standards together with the cultivator-rigs can be swung backward thereby elevating the cultivating devices, means holding the implement in balance by the pull of the team, and a lever mounted on the implement connected with the wheel-standards for moving them backward.

16. In an implement of the character described, the interchangeable cultivator-rigs comprising the trailing frames K, each consisting of a pair of straps or bars whose front ends are equipped with clamp-members for attachment to the cultivator-frame, the blocks L bolted between the rear ends of said bars, and the oppositely-oblique shovel-beams M and N equipped with cultivating devices for working opposite sides of a row and respectively attached to the blocks L.

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

CHARLES H. MELVIN.

Witnesses:

CHARLES H. POPE,
OSCAR A. ECKERMANN.

Correction in Letters Patent No. 868,107.

It is hereby certified that in Letters Patent No. 868,107, granted October 15, 1907, upon the application of Charles H. Melvin, of Moline, Illinois, for an improvement in "Lister-Cultivators," an error appears in the printed specification requiring correction, as follows: In line 51, page 3, the word "have" should read *having*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of October, A. D., 1907.

[SEAL.]

E. B. MOORE,
Commissioner of Patents.

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15. In a cultivator, the combination of a tongue, a depending yoke on which said tongue is mounted, the legs of said yoke having lower lateral extensions, sleeves on said extensions, depending wheel-standards and trailing cultivator-rigs attached rigidly on said sleeves, the arrangement being such that the wheel-standards together with the cultivator-rigs can be swung backward thereby elevating the cultivating devices, means holding the implement in balance by the pull of the team, and a lever mounted on the implement connected with the wheel-standards for moving them backward.

16. In an implement of the character described, the interchangeable cultivator-rigs comprising the trailing frames K, each consisting of a pair of straps or bars whose front ends are equipped with clamp-members for attachment to the cultivator-frame, the blocks L bolted between the rear ends of said bars, and the oppositely-oblique shovel-beams M and N equipped with cultivating devices for working opposite sides of a row and respectively attached to the blocks L.

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