

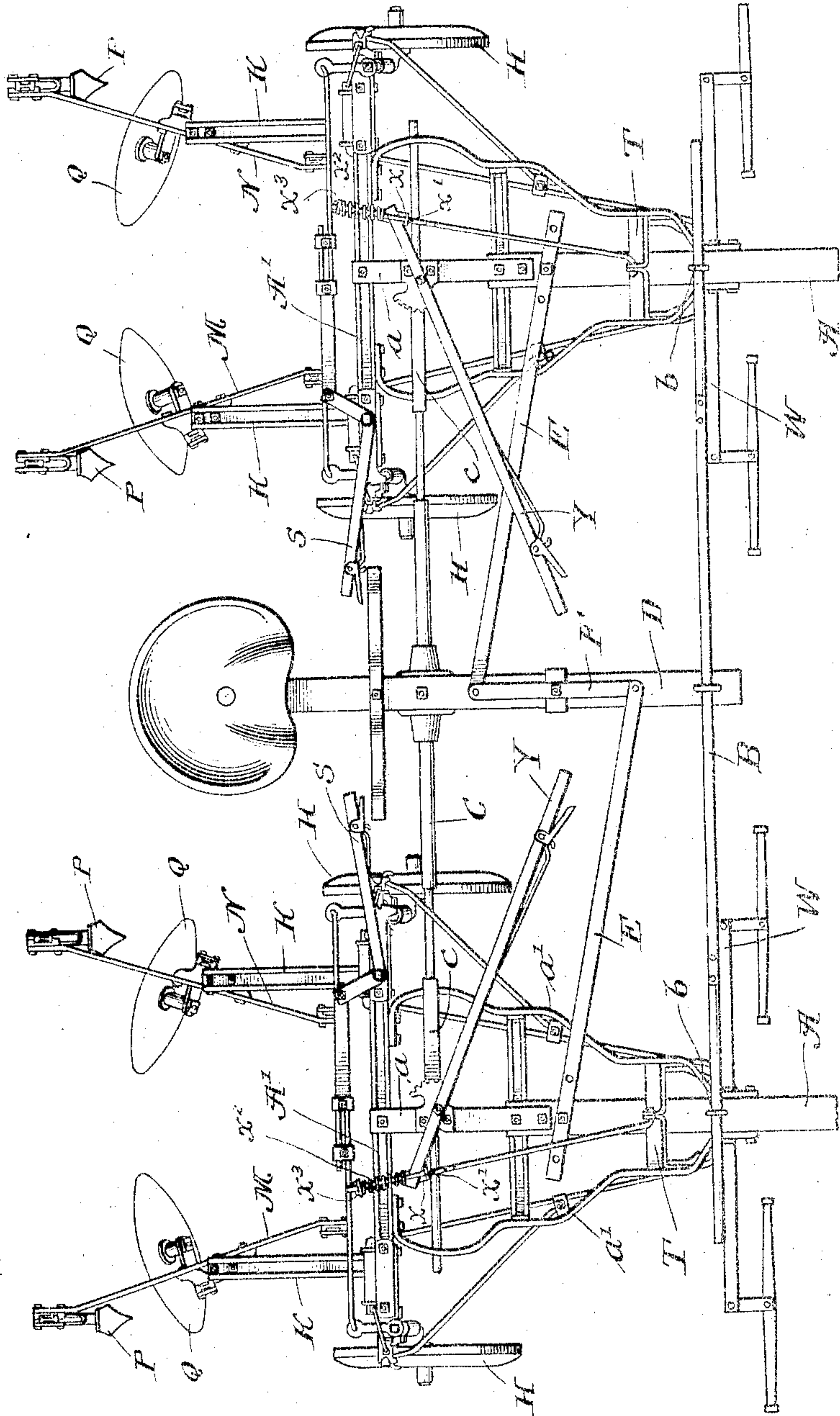
No. 879,187.

PATENTED FEB. 18, 1908.

C. H. MELVIN.
LISTER CULTIVATOR.
APPLICATION FILED JULY 17, 1907.

6 SHEETS—SHEET 1.

Fig. 1.



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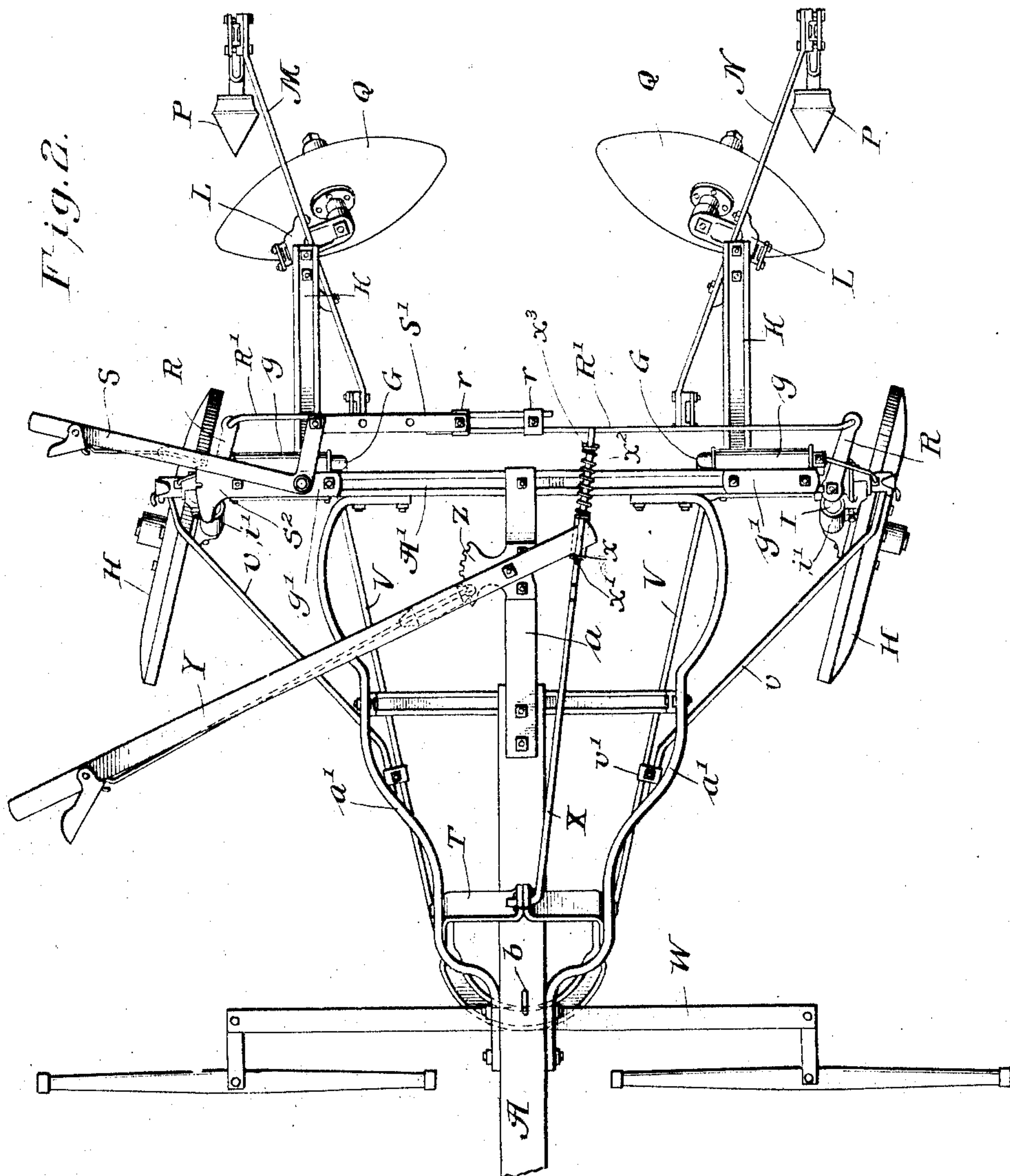
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6 SHEETS—SHEET 2.



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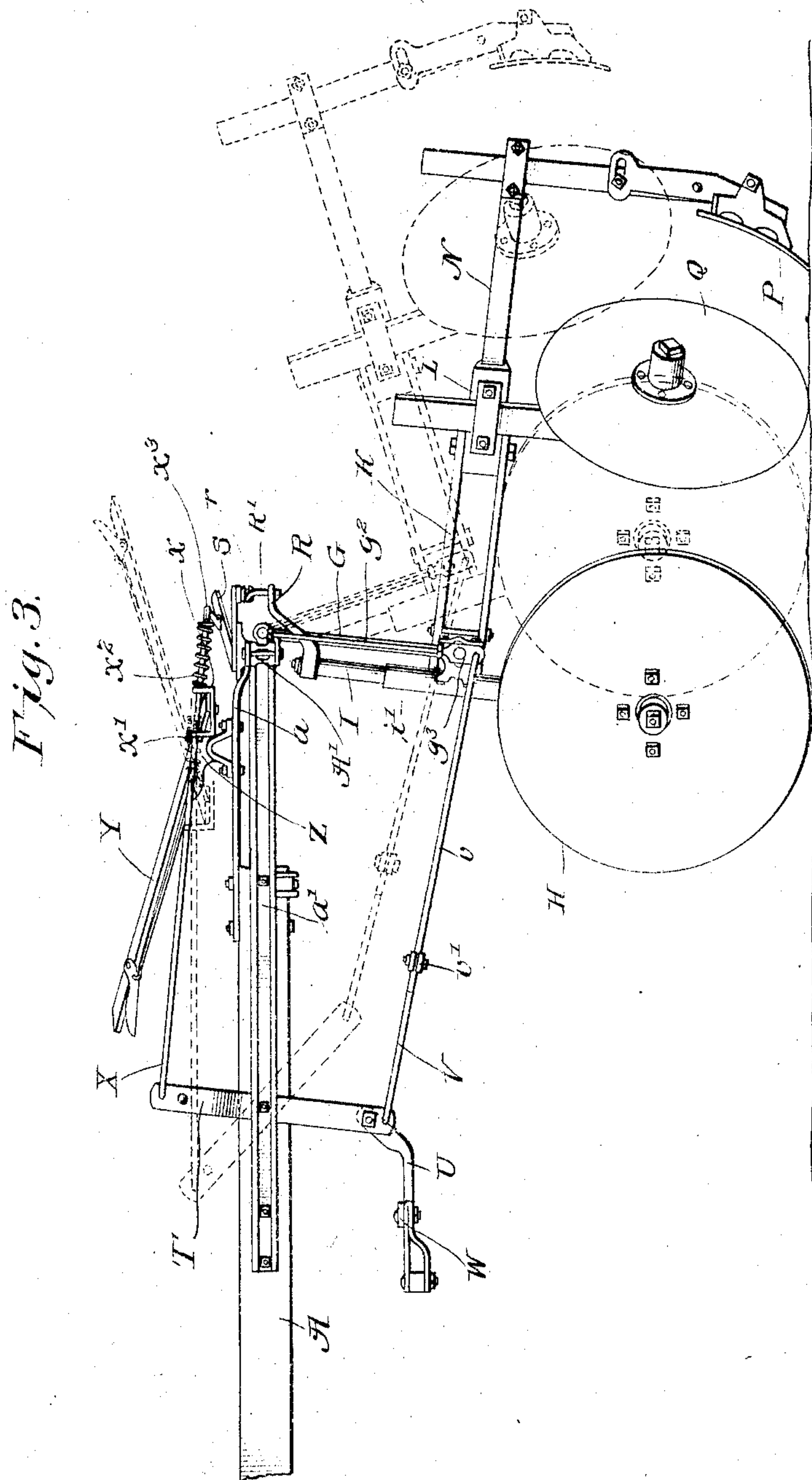
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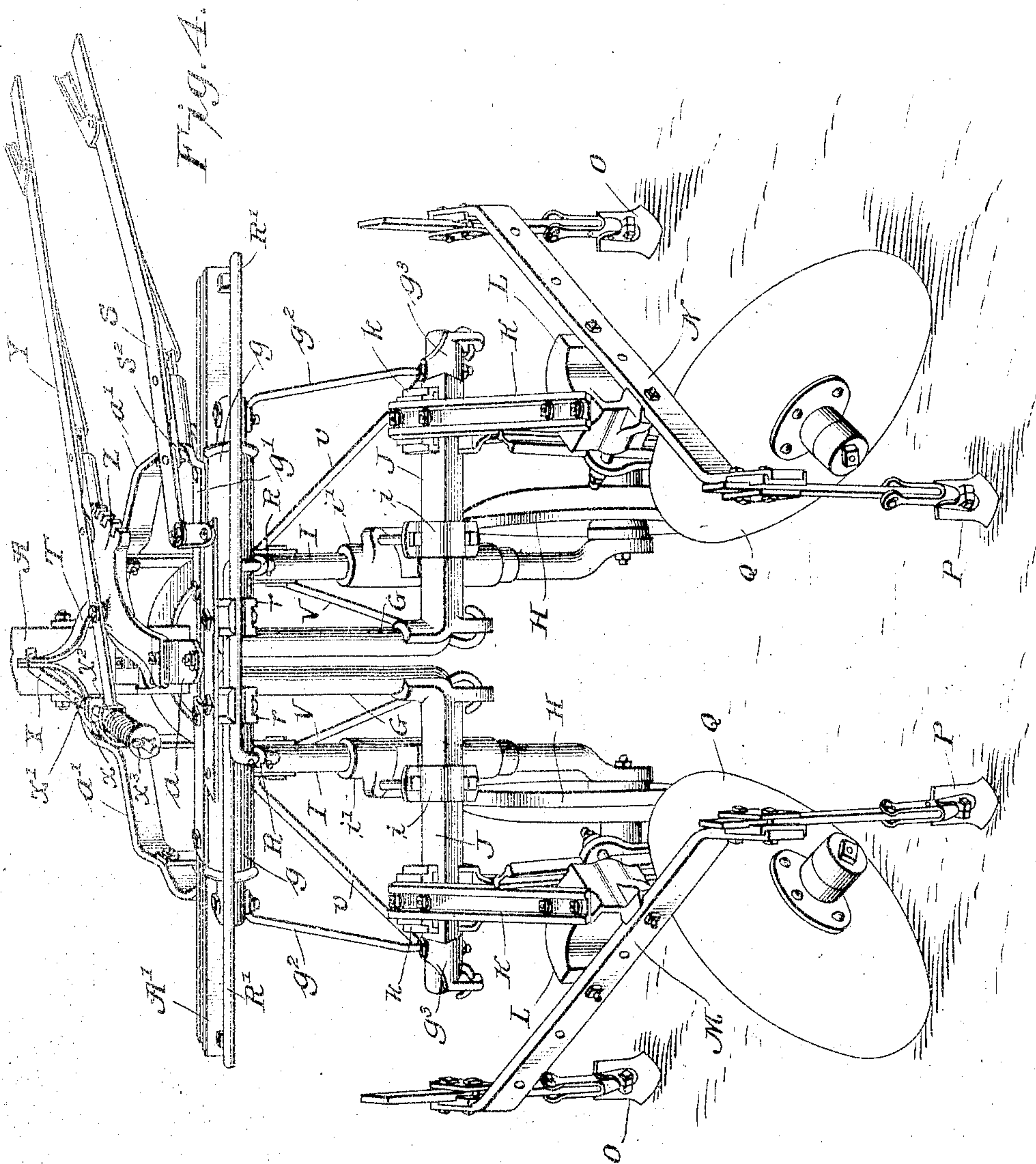
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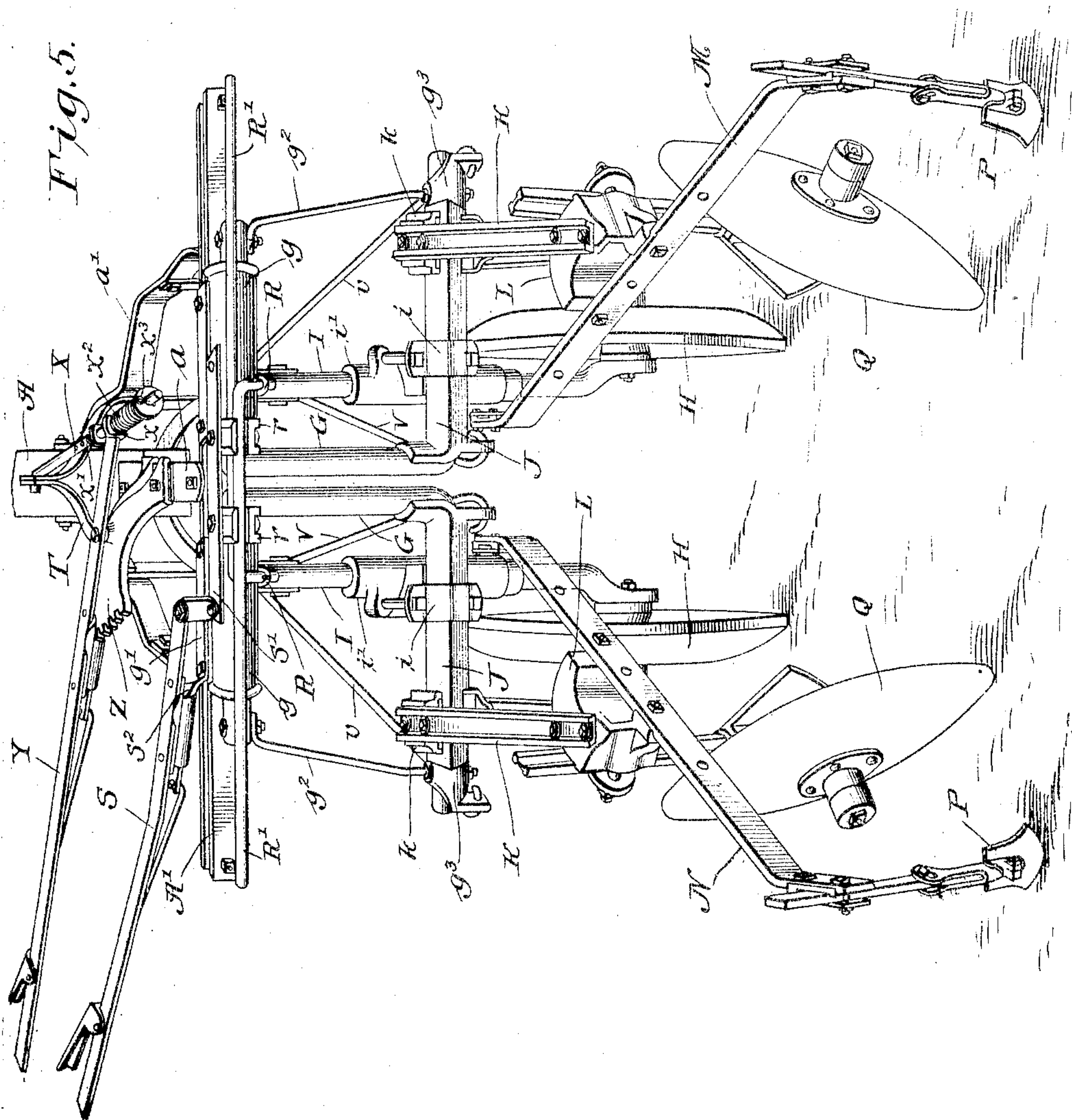
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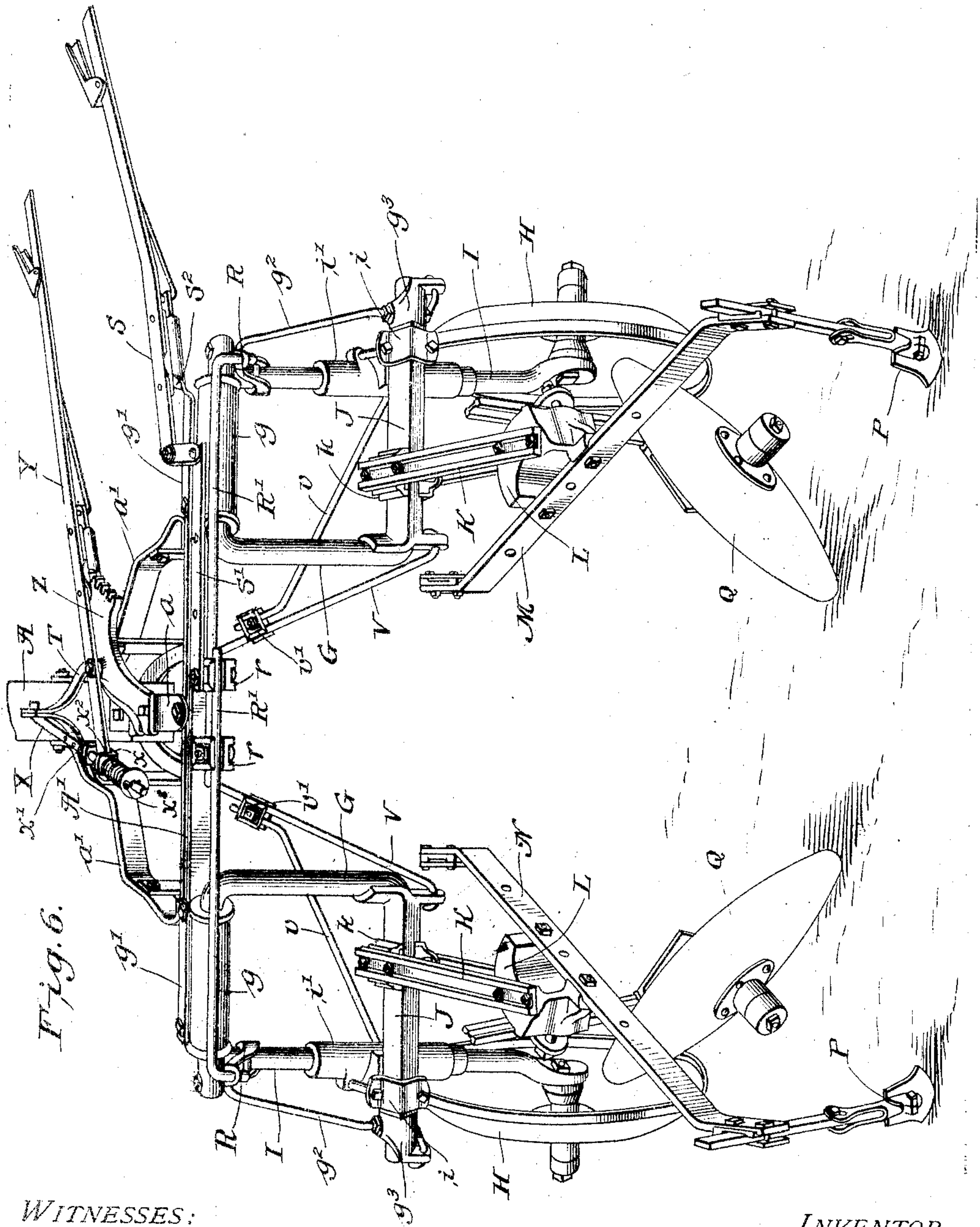
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6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

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

LISTER-CULTIVATOR.

No. 879,187.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed July 17, 1907. Serial No. 384,194.

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.

The main objects of this invention are to improve the general construction and increase the efficiency of operation of lister cultivators of the character set forth in my prior patent No. 781011 and pending application Serial No. 293544; Patent No. 868,107, dated October 15, 1907, and, more especially, to enlarge the range of adjustment of the cultivator-rigs and their supporting and guiding wheels; to improve the construction whereby the implement is mounted to permit raising the rigs by throwing back the wheels relative to the frame; and to provide an implement of the character noted having, in addition to its other capacities and functions, the further capacity of enabling its course to be deflected without disturbing the alinement of the working parts to the corn row.

The foregoing results are accomplished by means substantially as represented in the accompanying drawings, which are to be taken as a part of this specification; it being understood, however, that the details of construction and arrangement of parts of the illustrated machine may be modified in various ways without departing from the principle of my invention; so that I do not desire to be limited to the specific construction shown.

The invention will first be described by reference to said drawings and then more particularly pointed out in the appended claims.

Figure 1 of said drawings is a top plan view of a two-row implement embodying my invention, said implement comprising two flexibly-connected cultivators or sets of supporting-wheels and cultivator-rigs respectively adapted for working one row. Fig. 2 is an enlarged plan view of one of the cultivators shown in Fig. 1, or one set of supporting-wheels and cultivator-rigs together with the draft-tongue and frame-work therefor. Fig. 3 is a side view of the cultivator shown in

Fig. 2, with dotted lines indicating an elevated position of the cultivator-rigs. Fig. 4 is a rear perspective view of one of the cultivators arranged for the first operation of cultivating young corn. Fig. 5 is a rear perspective view of one of the cultivators arranged for the second cultivation of the corn after it has reached a larger and more hearty growth. Fig. 6 is a similar view of one of the cultivators arranged for the third operation of the corn after the plants have attained a considerable height, this being usually the last cultivation after which the plants are left to mature and yield their produce.

In Fig. 1, which represents a two-row implement of a general character similar to that disclosed in my former application Serial No. 293544, two wheel-supported cultivators or opposite sets of supporting-wheels and associated pairs of cultivator-rigs, each arranged for working on opposite sides of a row of corn, are shown flexibly-connected and laterally movable on a transverse seat-frame; 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. The cross-bars B and C of the seat-frame are shown joined by a medial seat-bar D; and the two tongues or draft-poles A, to which the opposite pairs of supporting-wheels and cultivator rigs are respectively attached, are connected to said cross-bars B and C by any suitable means allowing said tongues to move laterally on the seat-frame; for which purpose the front cross-bar B is shown passed loosely through or slidably fitted in the eyes of eye-bolts *b* on the tongues, while the rear cross-bar C is slidably fitted in the apertured ends of brackets or straps *c* affixed to the tongues. The eye-bolts *b* are preferably swiveled or pivotally secured in the tongues A, and the straps *c* are also pivotally attached thereto. The tongues A are also shown pivotally connected by links E to the opposite arms of a lever F which is medially fulcrumed or pivotally secured to the central seat-bar D; whereby the tongues and sets of cultivator-rigs attached thereto are caused to move laterally in and out at opposite sides of the machine in unison, and at equal distances from the seat-bar, as explained in my former application. My present invention is not restricted to any particular con-

struction of seat-frame and flexible connection between the cultivators, the arrangement shown being illustrated only by way of example.

5 Each set or pair of cultivator-rigs, together with the corresponding pair of supporting and guiding wheels on which the implement is mounted, and frame-work whereby said cultivator-rigs and wheels are attached to the
10 respective tongue, may for the purposes of this specification be considered as a one-row cultivator embodying my improvements, and a description of one of such cultivators will suffice.

15 As shown, the tongue A is rigidly attached by an end bracket or strap *a* and side braces *a*¹ to a rear transverse frame-bar or member A¹, which in the present case is shown comprising two I-beams bolted together. These
20 parts constitute the rigid draft-frame for one act of cultivating devices, which frame is mounted on pivotal wheels H having an extensible connection with a lever on the frame for casting said wheels in unison.
25 The said pivotal wheels, together with trailing cultivator-rigs carried by the frame, are adjustable laterally for varying the space between the wheels and rigs; and the said wheels with the rig-frames are also swung
30 from the main frame in such manner that the rigs can be lifted or swung upward by moving back the wheels relative to the frame; while the implement is normally held in balance by the pull of the team, which holds
35 the wheels forward and draws the cultivating devices down into the soil.

The mode of attachment of the wheels and cultivator-rigs to the frame, whereby the foregoing results are obtained, is as follows:
40 The frame-member A¹ is mounted on a divided arch G, swung therefrom and adapted to be widened or narrowed, thus constituting a laterally extensible supporting frame, the half-members of which carry the respective
45 wheels H and rig-frames which work on opposite sides of the row. For this purpose, said arch comprises, preferably, two reversely arranged □-shaped half-members, and the upper arms of said half-members are
50 journaled or rotatably secured in horizontal sleeve-bearings *g*, which latter are adjustably-secured by clamps *g*¹ to the rear frame-member A¹. The lower arms of the said half-members are equipped with fixed pipe-
55 sleeves J, of square or angular exterior configuration. Brace rods *g*² are shown joining the outer ends of the upper and lower arms of the half-members of the arch. On said pipe-sleeves J are adjustably-secured, by means of
60 clamps *i* and *k*, the bearing-boxes *i*¹ of the pivotal wheel-carrying standards or caster spindles I, and the front ends of the trailing rig-frames K. By means of the clamps *i* and
65 *k*, the wheel-standards and rig-frames can be independently adjusted laterally on the

square sleeves J, as may be necessary, while the division of the arch G, to which the wheels and rigs are attached, permits adjustment of the wheels and rigs together for
70 widening or narrowing the distance between them, in accordance with adjustments needed for cultivation at various stages of growth of the plants.

The rig-frames K and cultivator-gangs carried thereby are, by way of example,
75 shown substantially as disclosed in my former application; said rig-frames comprising straps or bars between the rear ends of which are bolted blocks L, having bolted or attached thereto the shanks of rotary culti-
80 vator disks Q and oblique shovel-beams M and N; said shovel-beams M and N being arranged at opposite sides of the row, each carrying a front cultivator blade or shovel O, and rear cultivator blade or shovel P, and the
85 cultivator disks Q being respectively arranged between said blades O and P, and inclined corresponding to the obliquity of the respective shovel-beams M and N. The two
90 rigs or gangs of cultivating devices are interchangeable and adapted to be transposed from one to the other side of the row, which is most conveniently accomplished either by
95 transposing to opposite sides the blocks L with the parts attached thereto, or by transposing the whole rig-frames K with the parts attached thereto; but may also be accomplished by transposing the shovel beams M and N and shanks of the disks Q.

In Fig. 4, which represents the cultivator
100 arranged for the first cultivation of young corn when it is desired to destroy the weeds which spring up in the furrow and on the sides of the ridges, the half-members of the
105 arch G are shown brought together, and the solid faced disk-wheels H are set to travel in the bottom of the furrow against the sides thereof and thus guide the travel of the rigs and blades which do the cultivating work. The disks Q are arranged to throw outward,
110 and they 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 rig-beams M and N converge rearwardly, carrying the rear culti-
115 vator blades P in the furrow, so as to weed out foreign growths on opposite sides of the row, and carrying the front cultivator-blades O along the tops of the ridges, so as to stir up this portion of the soil and destroy all
120 growths thereon.

In Fig. 5, which represents the cultivator
125 arranged for the second cultivation after the plants have attained a more advanced growth, the arch-members G and wheels H remain as before, so that the wheels still travel inside of the furrow-walls; but the cultivator-rigs or gangs are transposed and the front cultivator-blades O are left off. The
130 rear cultivator-blades P, which by transpo-

sition of the rigs are thrown further apart, run on the tops of the ridges, while the disks Q are arranged to throw inward and slice off portions of the ridges and throw them in the furrow, leaving the furrow about half full, more or less.

In Fig. 6, which represents the cultivator arranged for the third cultivation at a later stage of growth of the corn, after which the plants are left to ripen, the rigs retain the same general position as for the second operation, but are spread apart by widening the arch G or spacing the half-members thereof. The wheels K are also arranged outside of the rig-frames, so as to run as far apart as possible. In this operation, the disks Q take the remainder of the ridges and throw them to the corn, leaving the dirt hilled up for about four or five inches against the corn, and the surface on the sides at practically its original level, this surface being stirred up by the rear cultivating blades.

The above explanation of the successive cultivating operations is substantially as set forth in my aforesaid application, and is repeated here for a clearer understanding of the illustrated implement. I desire it to be understood, however, that my present invention is not confined to any particular construction of cultivator-rigs or gangs, since other suitable types or species of rigs or gangs may be used if desired. It should also be understood that the foregoing explanation is made more especially with reference to the particular utility for which the implement is intended, but without essential limitation thereto, the implement being adapted for other cultivating purposes.

The pivot-standards or caster-spindles I, which carry the pivotal wheels H, are provided on their upper ends with crank-arms R, and said crank-arms are connected by connecting rods R¹ to a link S¹, which latter is connected to the shorter arm of a lever S, shown mounted on the clamp v¹ at one end of the rear frame-bar A¹; said lever S being provided with the usual supplemental lever and spring-actuated lock-bolt for engaging a notch in a rack S². The wheels H run parallel and normally are in alinement with the direction of travel of the team, in which position the wheels are held by engagement of the aforesaid lock-bolt with the rack S². But on disengaging said lock-bolt from the rack, the lever S can be moved to turn the cranks R, through the connections S¹ and R¹, so as to pivot or caster both wheels in unison, thereby deflecting the course of the implement, but without affecting the alinement of the cultivator-rigs to the row of corn. The two connecting-rods R¹ overlap and are joined by adjustable clamps r, to one of which the link S¹ is pivotally attached. By loosening the clamps r, the rods can be shifted so as to extend or shorten the connection

between the lever S and crank-arm R in accordance with the spacing between the half-members of the arch G, which carry the respective wheels H and cultivator-rigs.

For holding the implement in balance by the hitch or pull of the team, and providing for raising the cultivating-devices from the soil when desired, a construction substantially similar to that of my aforesaid application is included in the present implement. As shown, a forked or bi-branched lever T, pivotally-mounted on the draft-frame, straddles the tongue A, and the lower ends of said bi-branched lever below the tongue are connected by a curved link U to the whiffletree W to which the horses are hitched. Said lower arms of the forked lever T are also connected by draft-rods V to the lower parts of the arch-members G; said draft-rods being shown hooked in apertured ears j on the square sleeves J. Supplemental draft rods v, adjustably attached by clamps v¹ to the draft-rods V, extend to the outer ends of the lower arms of the arch-members G, being shown hooked in apertured ears on the collars g³, which latter are connected by the aforesaid brace-rods g² to the upper arms of said arch-members. The clamps v¹ enable the draft-rods v to be adjustably connected to the main draft-rods V, in accordance with the widening or narrowing of the arch G. Thus, by means of the under hitch, the pull of the team holds the wheels and cultivator-rigs in proper relation to the frame, the implement being in balance, and the draft tends to revolve the rigs and wheels on the upper horizontal arms of the arch, and thereby pulls the rear cultivating blades and rotary disks into the ground. The upper end of said forked lever T is connected by a rod or link X to a lever Y, having the usual supplemental lever and lock-bolt for engaging a segmental rack Z mounted on the tongue A. By pulling back on the lever Y, the forked lever T is thrown forward, as indicated in Fig. 3 by dotted lines, thereby pushing back the wheels H and lifting the rigs. When the lever Y is thrown forward, the pull of the team again pulls the wheels forward and draws the cultivator devices into the soil. The lever Y is shown engaging in a yoke or stirrup x on the link X. Said yoke or stirrup x can slip or slide on the rod X, and is pressed forward against any suitable stop x¹ on said rod by means of a coiled spring x², the latter being interposed between the yoke x and a collar or stop x³ on the rear end of the rod X. When the operator is starting the machine, he throws the lever Y forward and locks it in the notch of the rack Z at which the machine is desired to work. In this movement, the shovels are lowered, and when they strike the ground the operator continues to push the lever Y forward, thereby compressing the spring x², until the lever Y is held at the de-

sired notch as aforesaid. As the horses draw the machine along, the shovels penetrate in the ground through the action of the expansion of said spring x^2 and the draft of the team, and they continue to lower until the stop x^1 strikes the yoke x , when the desired depth is reached. The purpose of the spring x^2 is to obviate the necessity of the operator keeping his hand on the lever Y and pushing until the shovels are down.

From the foregoing it will be observed, that, in addition to capacity for adjustment to meet the requirements of cultivation at various stages of growth, including the widening or narrowing of the arch which carries the supporting wheels and cultivating rigs and also independent adjustment of said wheels and rigs laterally on the arch, and in addition to the capability of the arch to swing on its upper bearings, allowing the wheels to move back and lift the rigs, and allowing the rigs to be brought forward and the cultivating devices to be drawn into the soil by the pull of the team, the pivotal wheels are adapted to be turned to deflect the course of the implement, but without disturbing the alinement of the working parts to the row, and without affecting the other capacities and functions of the machine.

In a two row implement, as represented in Fig. 1, the levers S and Y of both cultivators extend inwardly within range of the driver's seat, so that the driver can operate any one or more of said levers at will.

I claim as my invention and desire to secure by Letters Patent of the United States:

1. In a cultivator, the combination of a pair of cultivator-rigs for working on opposite sides of a row, an associated pair of supporting and guiding wheels adapted to straddle the row, said wheels and rigs together being laterally adjustable for widening or narrowing the space between them, the rigs being carried with the wheels said wheels having independent pivot bearings, an extensible connection between said wheels, and operative means independent of the draft means for turning or casting both wheels in unison, whereby the course of the implement can be deflected without disturbing the alinement of the cultivating devices to the row.

2. In a cultivator, the combination of a frame having laterally-adjustable members adapting said frame to be widened or narrowed, pivotal supporting-wheels on which said frame is mounted, said wheels adapted to straddle a row and respectively attached to said adjustable members, cultivator-rigs for working on opposite sides of the row respectively carried by said adjustable members and attached thereto independently of the wheels, and means independent of the draft means adjustably connected with both wheels for casting them in unison, whereby

the course of the implement can be deflected without disturbing the alinement of the cultivating devices to the row.

3. In a cultivator, the combination of a wheel-supported frame, cultivating devices carried thereby arranged for working on opposite sides of the row, pivot-standards carrying the wheels, separate laterally adjusted members respectively carrying the opposite rigs and corresponding pivot-standards, crank-arms on said pivot-standards, adjustable united connecting rods respectively connected with said crank-arms, and a lever mounted on said frame connected with said rods for shifting the same to cast the wheels.

4. In a cultivator, the combination of a wheel-supported frame, the supporting-wheels having pivot-bearings swung from the frame, and trailing cultivating devices swung with the wheel-bearings, means holding the implement in balance, means for throwing back said wheels and thereby lifting said cultivating devices, and means connected with said wheels for casting them in unison.

5. In a cultivator, the combination of a wheel-supported frame, laterally-adjustable members swung from said frame, cultivator-rigs for working on opposite sides of a row carried by said members, supporting-wheels for straddling the row having pivot-bearings carried by said members, means adjustably connected with both wheels for casting them in unison, means holding the implement in balance, and means for throwing back the wheels relative to the frame and thereby lifting the rigs.

6. In a cultivator, the combination of a wheel-supported frame, the supporting wheels thereof adapted to straddle a row and having pivot-bearings swung from the frame and adjustable laterally thereof, cultivator-rigs for working on opposite sides of the row carried by said frame and adjustable laterally, an extensible connection between said wheels, and means for casting them in unison.

7. In a cultivator, the combination of a divided arch adapted to be widened or narrowed, the respective half-members thereof having oppositely projecting lateral arms, supporting wheels adapted to straddle a row, cultivator rigs for working on opposite sides of the row, said wheels and rigs being attached to the lateral arms of the respective half-members of the arch, and each wheel and each rig being independently adjustable laterally on the arm carrying the same.

8. In a cultivator, the combination of a draft-frame, a divided arch on which said frame is mounted comprising laterally-adjustable half-members permitting widening and narrowing of said arch, supporting-wheels and cultivating devices for working

on opposite sides of the row respectively attached to the half-members of said arch, said wheels being pivotal for deflecting the course of the implement, and a lever mounted
5 on said frame having extensible-connections with said wheels for casting them in unison.

9. In a cultivator, the combination of a mounted frame, a swinging divided arch depending therefrom comprising laterally-adjustable half-members adapting said arch to
10 be widened or narrowed, pivotal wheels and cultivating devices for working on opposite sides of a row carried by the respective half-members of said arch, a lever mounted on
15 said frame having adjustable connections with said wheels for casting them, means for normally holding the implement in balance, and a lever mounted on said frame having connection with said arch for moving
20 back the wheels relative to said frame.

10. The combination of a wheel-supported frame, a divided arch swung from said frame comprising half-members adjustable laterally for widening or narrowing said arch, the
25 supporting-wheels being carried by said half members, cultivating devices for working on opposite sides of the row carried by said half members, a hitch-device connected to the frame but capable of a limited free movement, draft-rods connecting said hitch and
30 half-members of the arch, and a lever mounted on said frame connected with said hitch-device for moving the same backward.

11. The combination of a wheel-supported
35 frame, a swinging arch on which said frame is mounted carrying supporting wheels and cultivating devices, a hitch device and rod connections between said hitch device and arch, whereby the latter is maintained in
40 balance with the cultivating devices in the

soil, and a lever mounted on said frame connected with said hitch device for moving the same reversely to the direction of pull of the team.

12. In a cultivator, the combination of a
45 transverse frame-member, horizontal bearings adjustably-secured on said frame-members, a divided arch comprising depending yoke-shaped members having their upper
50 arms journaled in said bearings, cultivator-rigs and wheel-standards secured on the lower arms of said members, said wheel-standards being pivotal, crank-arms on said standards, an extensible connection between
55 said crank-arms, a lever connected therewith for casting the wheels, and a hitch device connected with the lower portions of said half members, and a lever adapted for throwing back the lower portions of said
60 half members relative to the frame.

13. In a cultivator, the combination of a draft-tongue, a frame attached thereto having a depending swinging arch provided with lateral arms, supporting wheels therefor
65 whose standards are rigidly secured on said arms, and trailing cultivator-rigs rigidly secured on said arms, a forked or bi-branched lever straddling the tongue, a lever mounted on the frame connected with said forked
70 lever above the tongue, a hitch-device connected with said forked lever below the tongue, and draft-rods connecting the lower arms of said forked lever with the opposite sides of the arch.

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

CHARLES H. MELVIN.

Witnesses:

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EUGENE L. TAYLOR.