

No. 701,950.

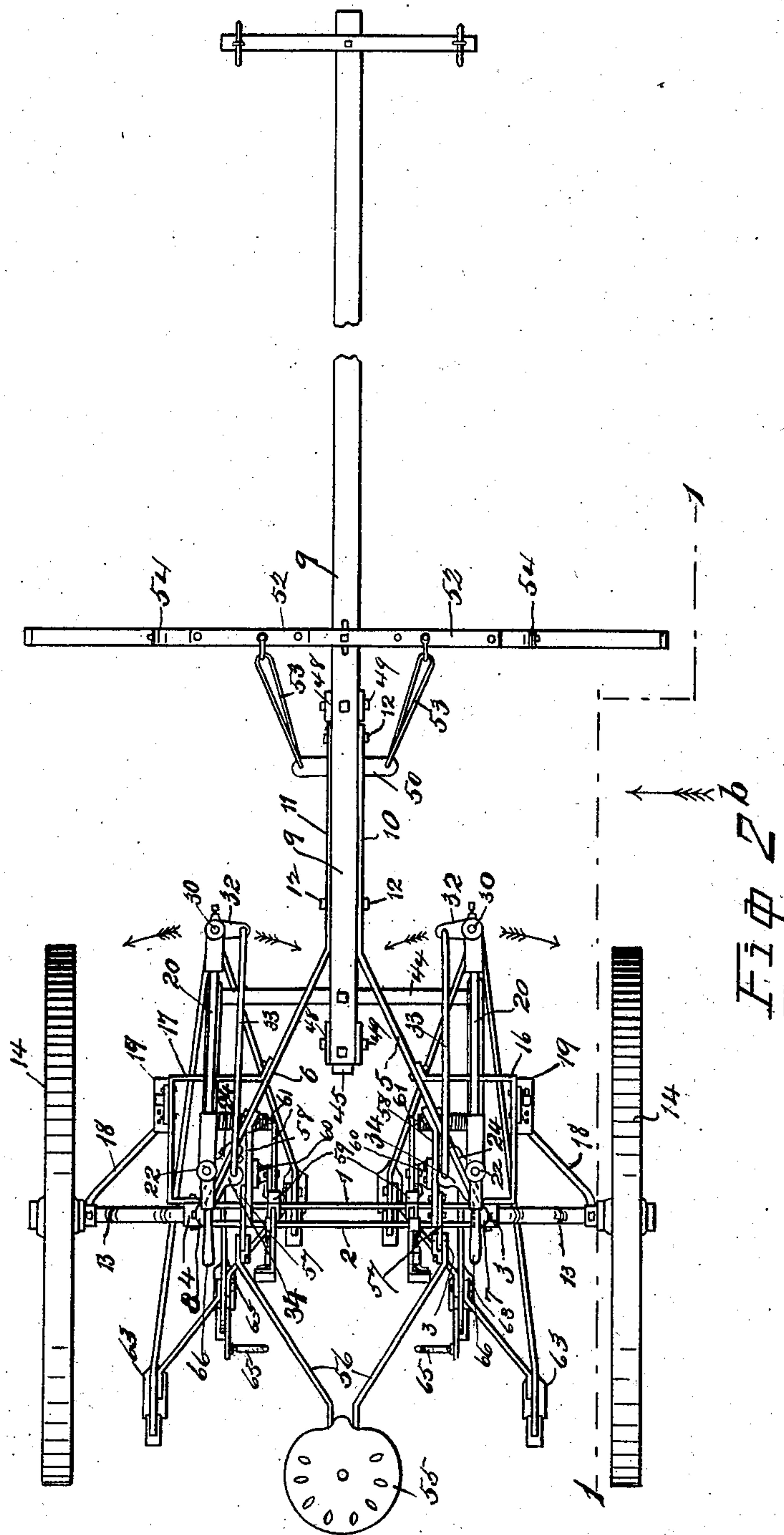
Patented June 10, 1902.

M. SHEW.
CULTIVATOR.

(Application filed Sept. 12, 1901.)

(No Model.)

3 Sheets—Sheet 2.



WITNESSES:
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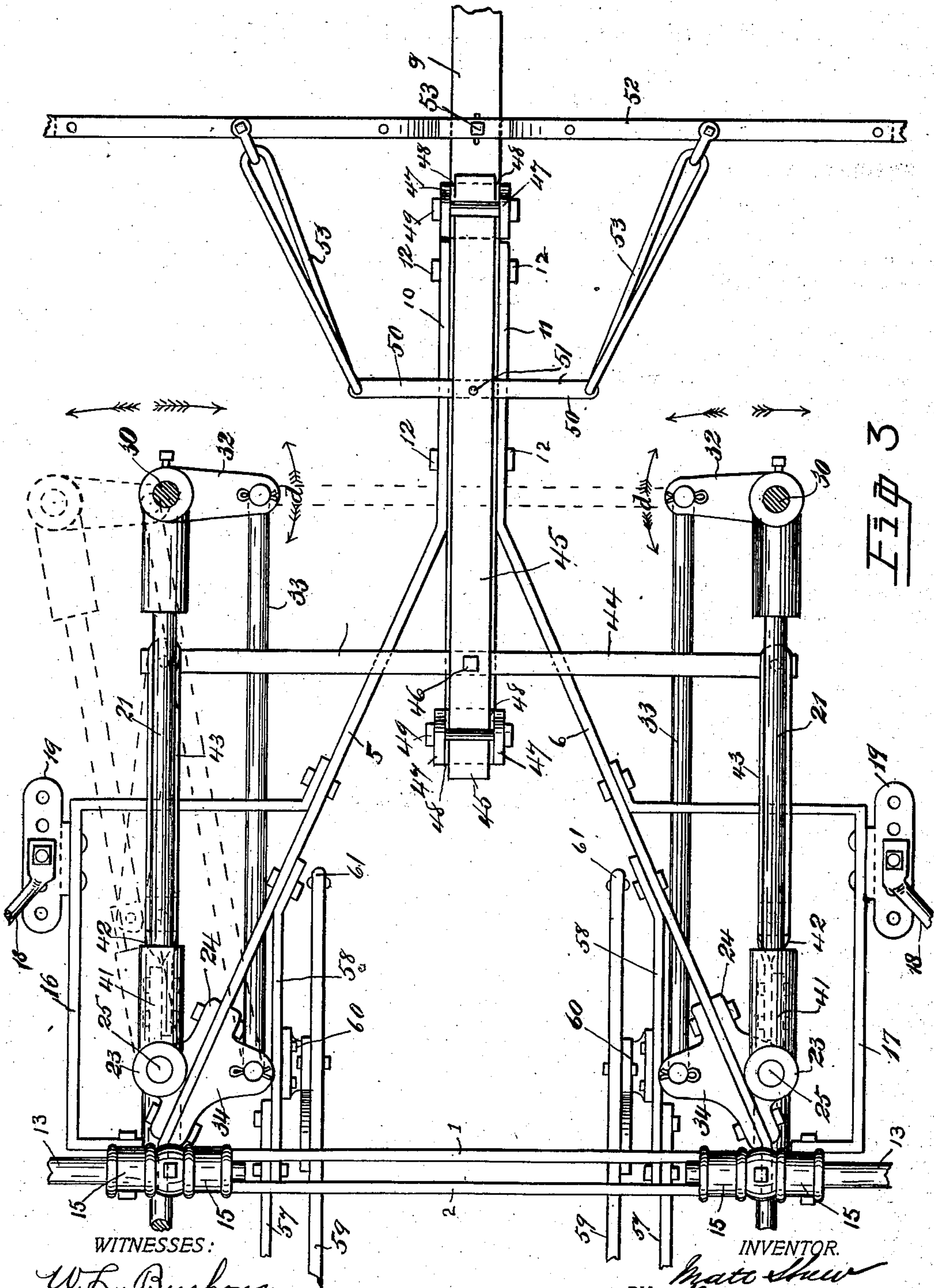
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INVENTOR.

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UNITED STATES PATENT OFFICE.

MATT SHEW, OF CAMBRIDGE CITY, INDIANA.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 701,950, dated June 10, 1902.

Application filed September 12, 1901. Serial No. 75,182. (No model.)

To all whom it may concern:

Be it known that I, MATT SHEW, a citizen of the United States, residing at Cambridge City, in the county of Wayne and State of Indiana, have invented new and useful Improvements in Cultivators, of which the following is a specification.

My invention relates to certain new and useful improvements in cultivators; and it consists in mechanism of peculiar construction whereby the parallel relation of the plows is maintained, all hereinafter more particularly described, and pointed out in the claims.

The objects of my invention are, first, to provide means whereby either of the plows of the cultivator may be moved in a horizontal plane, either inwardly or outwardly and independently of each other and whereby the supporting mechanism of said plows will automatically move to adjust itself to the various positions in which the plows may be set to maintain the latter in such adjusted position; to provide means whereby said plows when moved into any position inwardly or outwardly nearer to or from each other will automatically move to be in parallel relation to each other and whereby the said parallel relation will be maintained; to provide means whereby the draft or pull of the team will be directly applied to the plows—that is, the line of direction of the pull will pass from the neck-gear of said team or horses directly through the hitching means to the points of the pairs of gang-plows, and thereby relieve the neck-yoke of all downward pressure. I attain these objects by means of the improved construction of cultivator illustrated in the accompanying drawings, in which similar numerals of reference designate like parts throughout the several views.

Figure 1 is a side elevational view of the plow looking in the direction of the arrow *b*, Fig. 2. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged broken inverted plan view of the same looking in the direction of the arrow *a*, Fig. 1. Fig. 4 is an enlarged detail elevational view of the radius-bars or parallel-link mechanism. Fig. 5 is a plan view of the same, and Fig. 6 is an enlarged detail sectional view of the swivel-piece to which the plows are connected.

The main frame of the cultivator is com-

posed of the rear parallel bars 1 and 2, between which the separating-blocks 3 and 4 are securely bolted, and the diagonally-extending side bars 5 and 6, which latter are secured at the rear ends to the lugs 7 and 8, formed integral on the top sides of said separating-blocks 3 and 4. The tongue or shaft 9 is firmly secured to and between the forward portions or arms 10 and 11 of said diagonally-extending side bars 5 and 6 by suitable bolts 12. The axles 13, which are preferably circular in cross-section, are cranked to extend below the plane of the rear frame-bars or parallel bars 1 and 2 sufficiently far to raise the machine the proper distance from the ground when the supporting-wheels 14 are mounted on the lower cranked ends thereof, and said axles have their inwardly-extending upper cranked ends loosely fitted in the bores of the bosses 15, which latter are formed integral on the lower ends of the separating-blocks 3 and 4, and the said axles can be adjusted either forwardly or rearwardly an extent to properly balance the machine or to bring the center of gravity of the machine directly over the center of the axles. The side bars 16 and 17 are bent to extend inwardly toward the diagonally-extending bars 5 and 6, to which latter they are securely bolted, and the said bars 16 and 17 are also bent at their rear ends to lap over a portion of the ends of the bar 1 and to which they are bolted. The axle-braces 18 extend from the lower cranked ends of the axles 13 to the brace-carrier 19, to which their upper ends are bolted, and the said brace-bars 18 are provided for the purpose of retaining the axles 13 in any desired position, either forwardly or backwardly of the center of gravity of the main frame. The compensating radius-bars, each of which is alike, are composed of the upper and lower arm members 20 and 21, to the rear or hinged ends of which are permanently secured the upper and lower hinge-hubs 22 and 23 vertically one above the other, and which latter are hinged on the supporting-brackets 24 by the hinge-pins 25. The supporting or hinge brackets 24 are secured to the diagonally-extending frame-bars 5 and 6, at or near the rear ends thereof and in position thereon to permit the necessary horizontal swing of said radius or compensating bars 20 and 21. The

upper and lower hubs 26 and 27 are permanently secured in vertical alinement on the forward or free ends of the upper and lower arm members 20 and 21 of the radius or compensating bars, and the said forward hubs 26 and 27 and rear or hinged hubs 22 and 23 are each connected by the yokes 28 and 29, formed integral therewith, and thus the various members composing said radius-bars are permanently and securely connected together to form a strong and rigid structure. The hubs 26 and 27 are each drilled to receive the vertically-extending depending swivel-pieces 30, which latter are adapted to turn therein. Retaining-collars 31 are situated between the hubs 26 and 27 and secured to the swivel-pieces 30 to retain the same in position. The top ends of the swivel-pieces 30 project upwardly above the hubs 26, and the swinging arms 32 are keyed or otherwise secured in position thereon. A connecting-link 33, which is of a length equal to the length of said radius-bars, extends from each of the arms 32 to the retaining-brackets 34, wherein they are pivoted, and the said brackets 34 are secured permanently in such position on the diagonally-extending frame-bars 5 and 6 that the fixed centers of said links will be in alinement with the centers of the radius-bars, and thus when the radius or compensating levers or bars are swung to either the right or left, as indicated by the arrows, the arms 32 will be moved to turn the swivel-pieces 30, as indicated by the arrows *d*.

The bottom or depending ends 35 of the swivel-pieces 30 are of a disk form, and to each of said disks, against the parallel faces thereof, are bolted the swivel-disks 36, which latter have their swivel-hubs 37 projecting from and formed integral on their bearing-faces, and the said hubs are adapted to fit in the central bores of said disks to turn freely therein. Retaining-lips 38 are formed on the outer faces of said disks 36, between which the forward or draft ends of each of the outer pairs of bars 39 are fitted and secured to said swivel devices or disks 36 by the bolts 40, which latter pass through each of said disks 36, the depending disk ends 35 of said swivel-pieces 30, and the bars 39 to bind them together to form a swivel-joint to permit each of the gang-plows 63 to swing upwardly or downwardly or to rise and fall, and thus the gang-plows 63 are connected at their forward ends to swing in either a horizontal or vertical plane.

Integral on the lower hinge members 23 of the radius-bars are formed the seatings 41, to which are securely bolted the quarter-turned connecting-pieces 42. To these pieces are connected the links 43, which are connected at their forward ends to the free ends of the balancing-lever 44. The balancing-lever 44 is pivoted at its central portion to the draft-bar 45, at or near the rear end thereof, by the bolt 46. The draft-bar 45 is situated beneath the tongue 9, at the rear end thereof, and is

guided between the guide-lips 47, formed integral on the pieces 48, which latter are permanently secured to said tongue 9, and said draft-bar 45 is adapted to slide longitudinally between said guide-lips 47 a limited amount, said draft-bar 45 being held in position between said lips by the retaining-bolts 49. An equalizing-lever 50 is pivoted at its central portion to the draft-bar 45, at a point intermediate the ends thereof, by a bolt 51, and the free ends of said equalizing-lever 50 are connected to the hitching-bar 52, at points between the pivotal center and the free ends thereof, by the links 53. The hitching-bar 52 is composed of the upper member, which extends over the tongue 9, and the lower member, which extends under said tongue 9, and said lower and upper members are securely riveted together, and a pivot-bolt 53 passes through said tongue 9 and the upper and lower members of the hitching-bar 52 to pivotally secure the latter to said tongue 9. The hitching-bar 52 is bent to extend outwardly and downwardly from its central portion toward the downwardly-depending ends 54 thereof, to which latter ends the draft-gear of the horses is attached and in such a manner that a line drawn from the points of the leading plows of the gang-plows through the free depending ends 54 of the hitching-bar 52 will pass through the point at which the draft-gear is connected to the neck-yokes of the horses or team. The seat 55 is provided with the forwardly-extending supporting-arms 56, the forward ends of which are bent or looped, as shown in Figs. 1 and 2, to encircle the yielding depending arms 57, which latter are secured at their forward ends to the inner side bars 58. The lifting-levers 59, which may be of any suitable form of construction, are pivoted on their supporting-standards 60, and which latter are securely bolted to the inner bars 58. A yielding connecting means extends from each of the lower lever-arms 61 to the front end of the central bars 62 of the gang-plows 63 in the usual way peculiar to this type of plow, and the said means may consist of a coil-spring connected at its top and bottom ends by suitable links to each of said lever-arms 61 and to the gang-plows 63, as previously described.

The manner of practicing my invention I will now proceed to describe. The team or other traction means is first hitched to the machine, so that the pull of the tugs or draft portion of the harness thereof is applied directly to the ends of the hitching-bar 52 when the team is moving forwardly. The draft or pull is then directly transmitted to the draft-bar 45, through the equalizing-bar 44, which latter equally divides the force and transmits equal forces through the links 43 to the shorter arms 42 of the radius or compensating bars. These forces as applied to the arms 42 counterbalance the forces of resistance exerted by each of the gangs of plows 63 at the free forward or swinging ends of said radius-bars, to

which ends said plows are pivotally connected by the swivel-pieces 30 to swing in a horizontal as well as in a vertical plane. The operator seated on the seat 55 places his feet in the guiding-stirrups 65, connected to each of the gang-plows, at the rear ends thereof, and by means of said stirrups 65 moves either or both of the gang-plows into any position either inwardly or outwardly or nearer to or farther from each other. The compensating or radius bars immediately swing into position simultaneously as the operator moves the plows into any new or adjusted position to retain said plows in said adjusted position either inwardly or outwardly, and thus maintain them in parallel relation to each other and with the line of direction of the draft. The inwardly-extending arms 32, connected by the links 33 to a fixed point, are moved positively to turn the swivel-pieces 30, and thereby move the plows connected to the latter to assume parallel positions relatively to each other when said radius-bars are swung into any new position. The latter paralleling mechanism may be dispensed with when it is desired that the plows 63 be permitted to freely swing in their horizontal planes on their swivel ends by virtue of the draft alone and the resistance in opening the ground when the arms or radius levers or bars are swung into new positions, or vice versa. When it is desired to move the plows 63 into any new position by moving the radius-bars, the operator grasps the handles 66, by means of which either or both the radius-bars swing either inwardly or outwardly into new positions, which movement or working of said levers is readily performed and with little exertion on the part of the operator, in which adjusted positions said radius-bars remain until moved into a new position by the operator, and the plows 63, being connected, as previously described, at their front ends to swing in a horizontal plane, immediately and simultaneously adjust themselves automatically into position parallel with the line of draft of the machine and nearer to or farther from each other, as the free ends of said radius-bars are nearer to or farther apart.

50 Having thus fully described this my invention, what I claim as new and useful, and desire to cover by Letters Patent of the United States therefor, is—

1. In a cultivator, the combination with the frame thereof, supporting-wheels carried thereby, and a pair of gang-plows arranged beneath said frame, of means pivotally connected to said frame to which said plows are connected, and through the medium of which said plows may be swung toward or away from each other and maintained parallel to the line of draft, a draft-bar slidably mounted upon the tongue of the machine and extending longitudinally thereof, and a balancing-lever pivotally connected to said draft-bar and extending transversely thereof, said lever being suitably connected to the plow-

swinging means, whereby the draft of the team is transmitted to the plows through the draft-bar and equally distributed to said plows. 70

2. In a cultivator, the combination with the frame thereof, supporting-wheels carried thereby, and a pair of gang-plows arranged beneath said frame, of a pair of radius-bars for each of said plows, said radius-bars being pivotally connected to the frame and to which bars the plows are connected, whereby the plows may be swung toward or away from each other and maintained parallel to the line of draft, a draft-bar slidably mounted upon the tongue of the machine and extending longitudinally thereof, and a balancing-lever pivotally connected to said draft-bar and extending transversely thereof, said lever being suitably connected to the radius-bars, whereby the draft of the team is transmitted to the plows through the draft-bar and equally distributed to said plows. 80

3. In a cultivator, the combination with the frame thereof, supporting-wheels carried thereby, and a pair of gang-plows arranged beneath said frame, of a pair of radius-bars for each of said plows, said radius-bars being pivotally connected to the frame and to which bars the plows are adjustably connected, whereby the plows may be adjusted in a vertical plane and swung in a horizontal plane and maintained parallel to the line of draft, a draft-bar slidably mounted upon the tongue of the machine and extending longitudinally thereof, and a balancing-lever pivotally connected to said draft-bar and extending transversely thereof, said lever being suitably connected to the radius-bars, whereby the draft of the team is transmitted to the plows through the draft-bar and equally distributed to said plows. 90 100 105

4. In a cultivator, the combination with the frame thereof, supporting-wheels carried thereby, and a pair of gang-plows arranged beneath said frame, of a pair of radius-bars for each of said plows, said bars being pivotally connected to the frame, a swivel-bar carried by each pair of said radius-bars and to which the respective gang-plows are adjustably connected, an arm carried by each of said swivel-bars, a link connected to each of said arms and also connected to the cultivator-frame, whereby the plows may be swung toward or away from each other and maintained parallel to the line of draft, a draft-bar slidably mounted upon the tongue of the machine and extending longitudinally thereof, and a balancing-lever pivotally connected to said draft-bar and extending transversely thereof, said lever being suitably connected to the radius-bars, whereby the draft of the team is transmitted to the plows through the draft-bar and equally distributed to said plows. 110 115 120 125 130

5. In a cultivator, the combination with the frame thereof, supporting-wheels carried thereby, and a pair of gang-plows arranged

beneath said frame, of a pair of radius-bars for each of said plows, said bars being pivotally connected to the frame, a swivel-bar carried by each pair of said radius-bars and to
5 which the respective gang-plows are adjustably connected, an arm carried by each of said swivel-bars, a link connected to each of said arms and also connected to the cultivator-frame, whereby the plows may be swung
10 toward or away from each other and maintained parallel to the line of draft, a draft-bar slidably mounted upon the tongue of the machine and extending longitudinally thereof,

a balancing-lever pivotally connected to said draft-bar and extending transversely thereof, 15 and links extending from the draft-bar to the radius-bars, whereby the draft of the team is transmitted to the plows through the draft-bar and equally distributed to said plows.

In testimony whereof I have hereunto set 20 my hand in the presence of two subscribing witnesses.

MATT SHEW.

Witnesses:

THOMPSON R. BELL,
C. W. DOLL.