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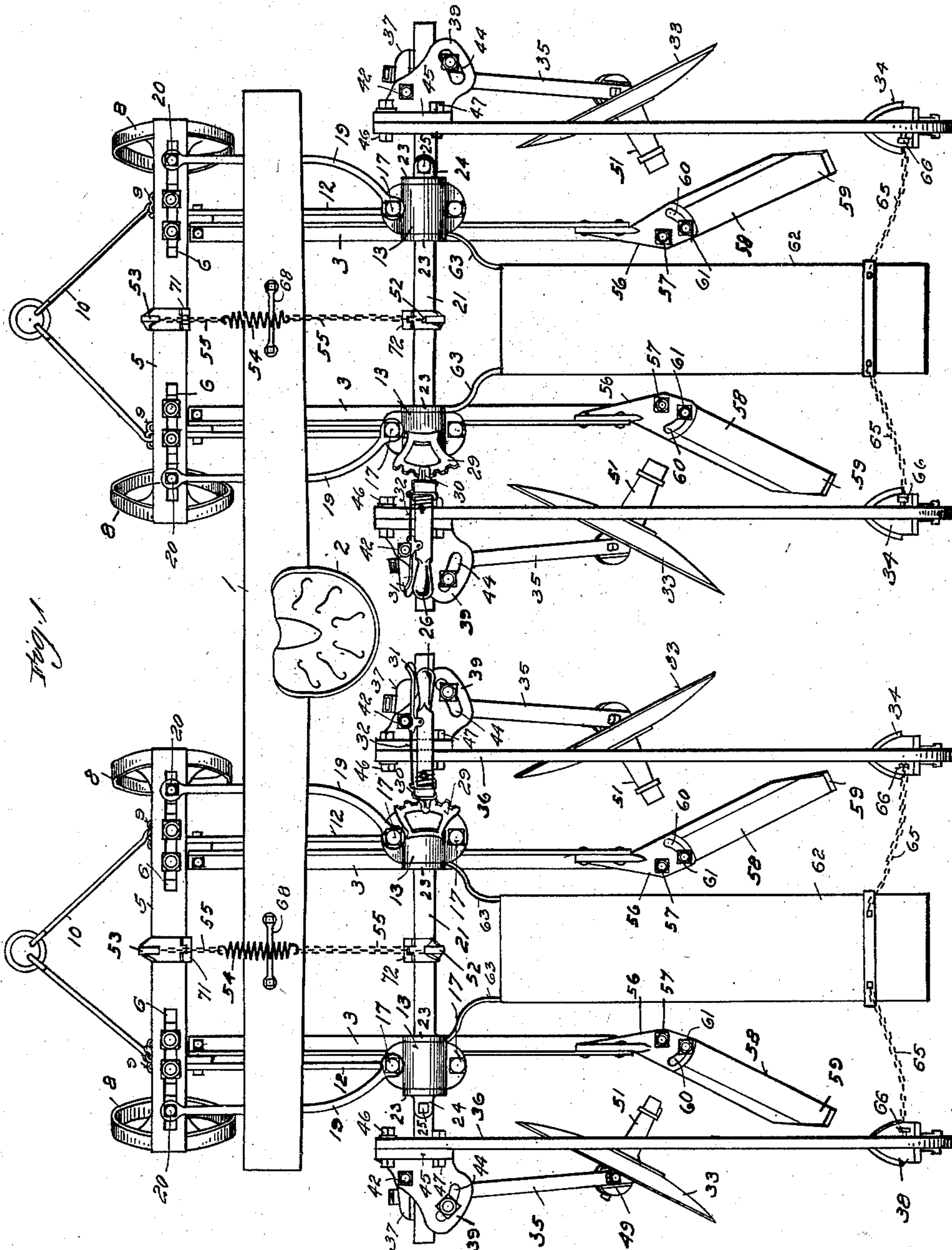
PATENTED JAN. 19, 1904.

A. V. RYDER.
TWO-ROW LISTER CULTIVATOR.

APPLICATION FILED NOV. 6, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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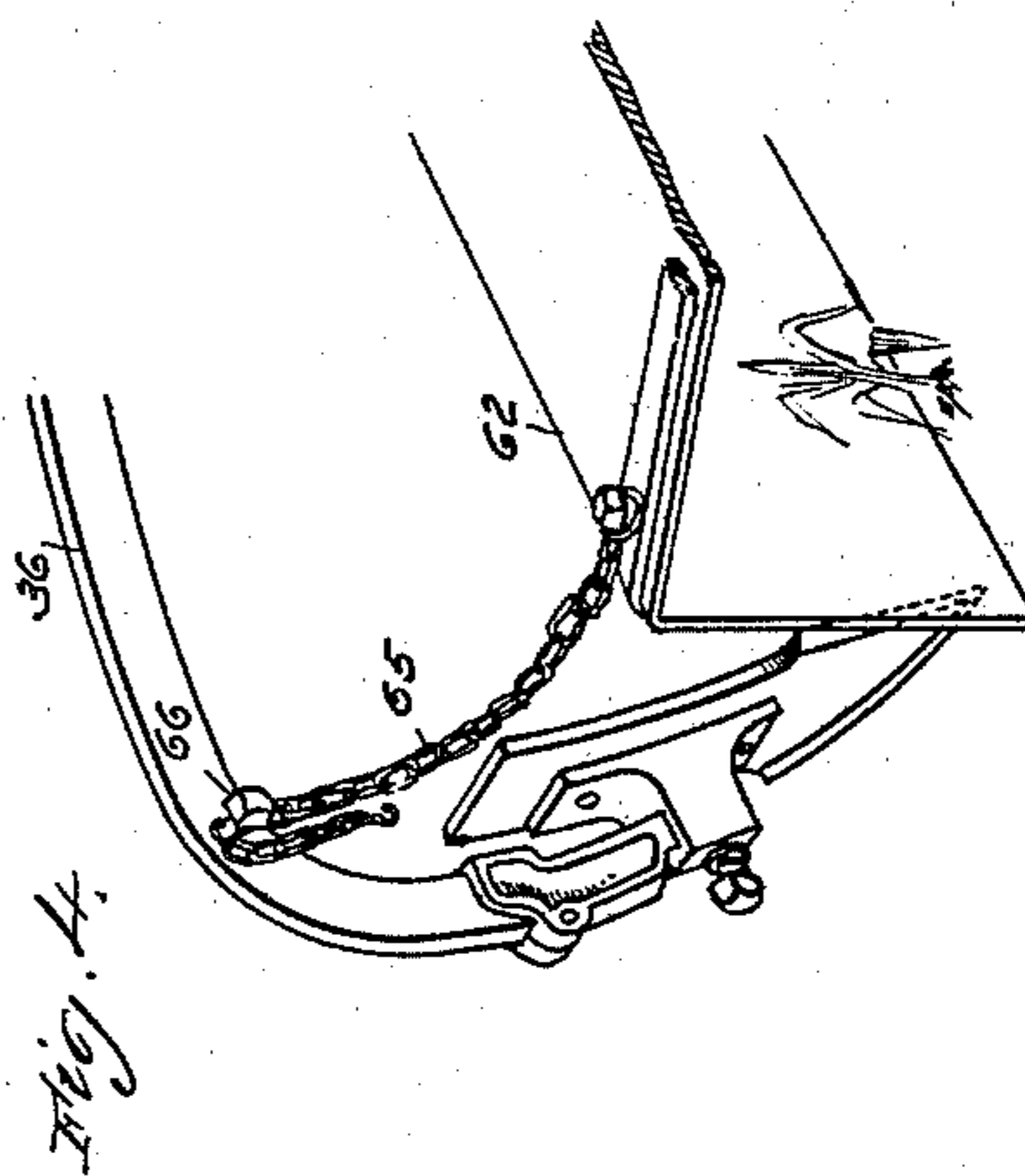
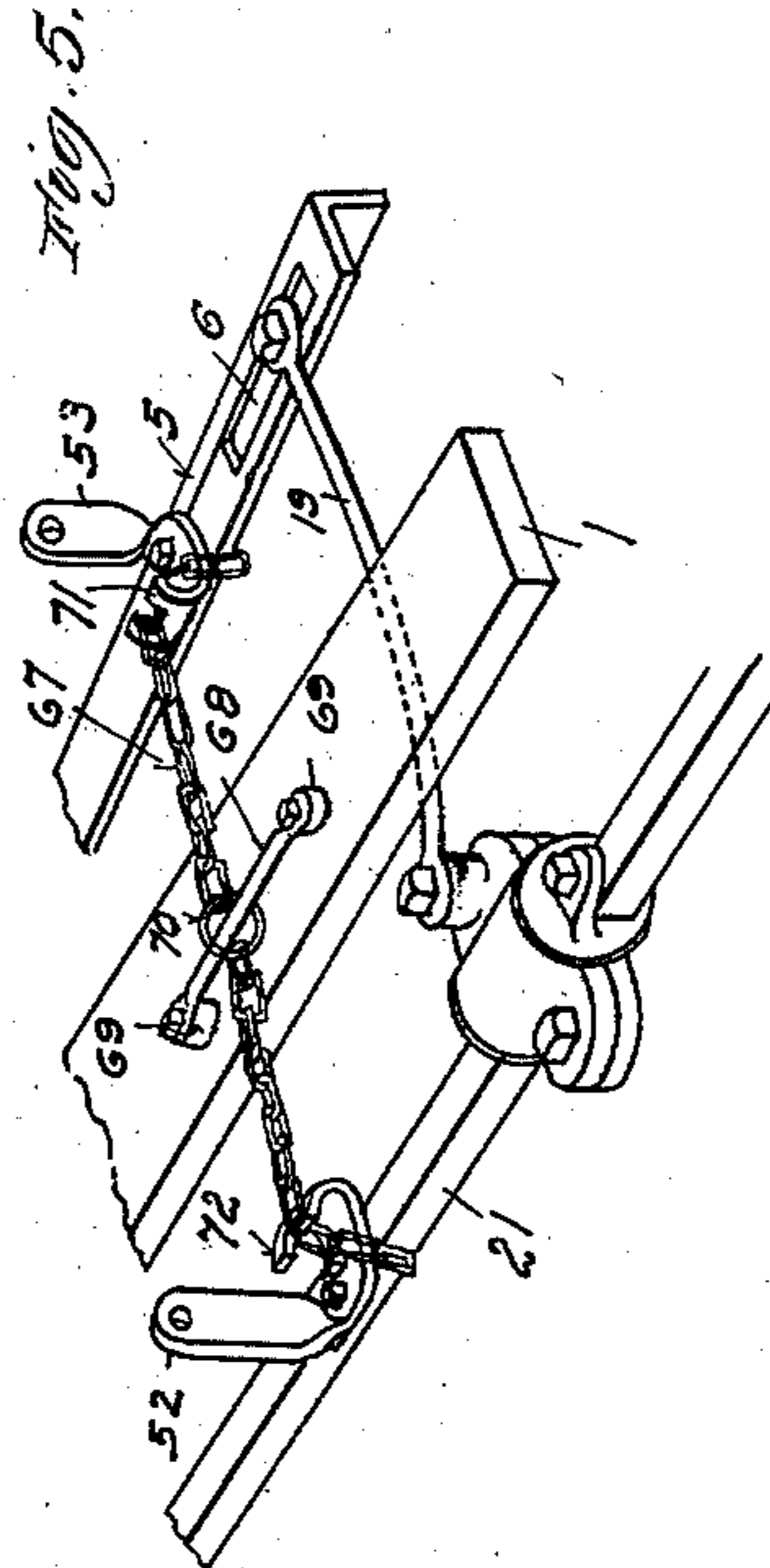
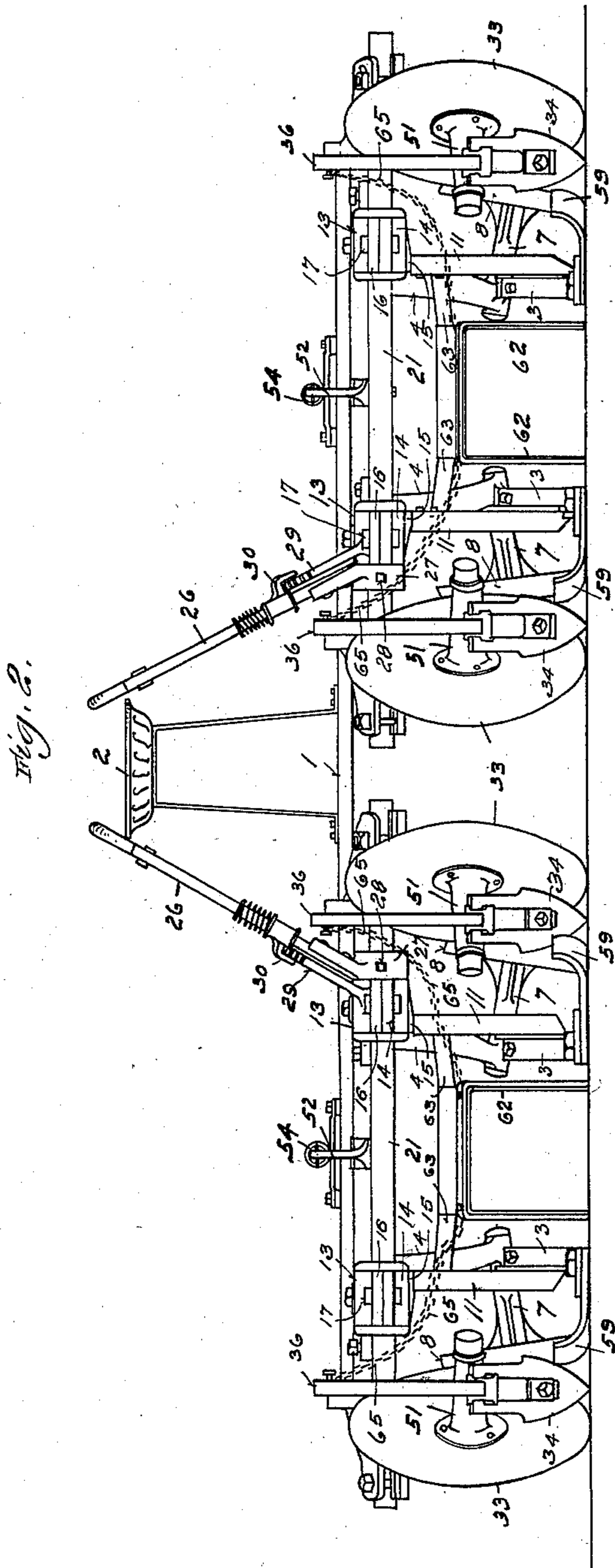
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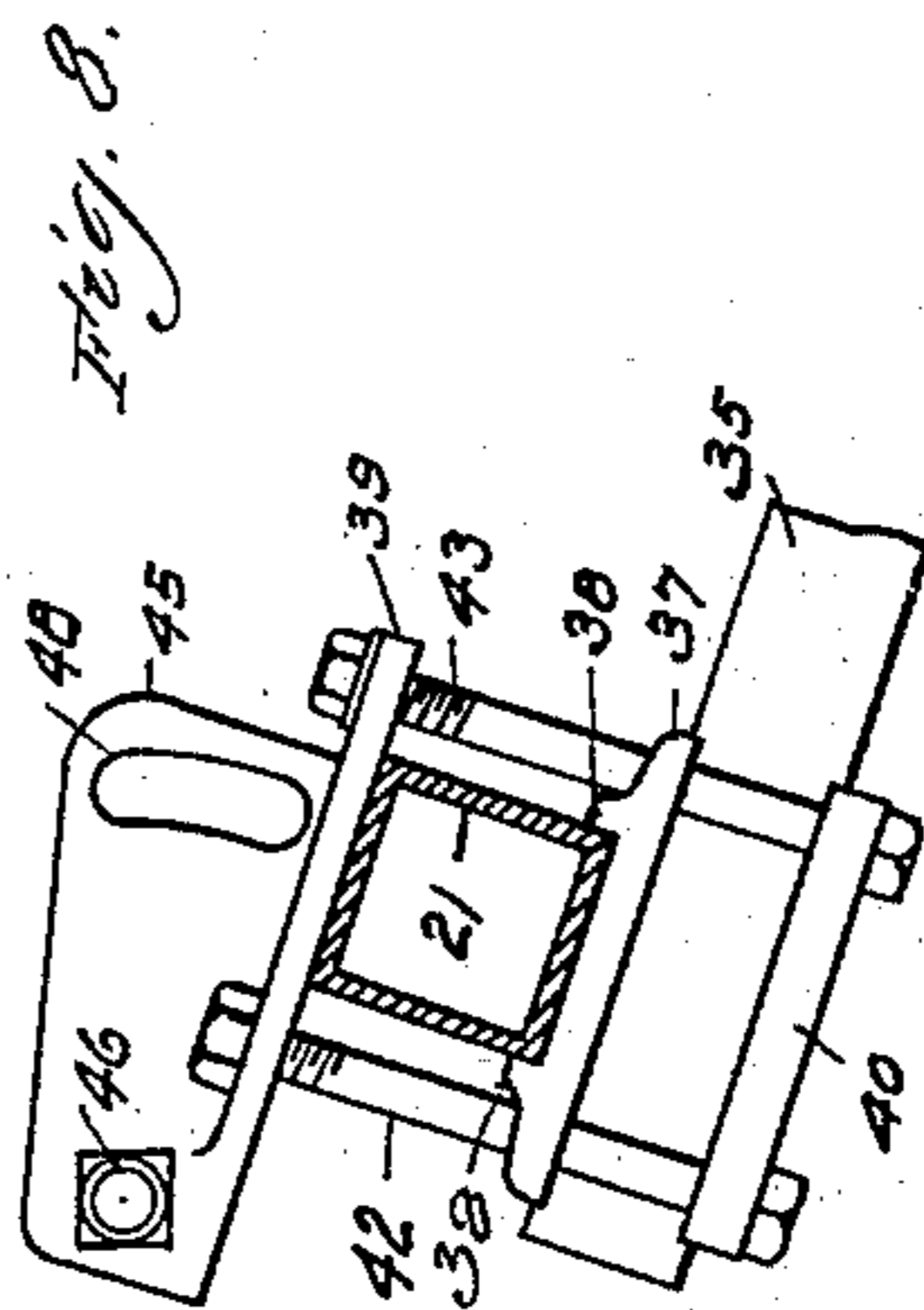
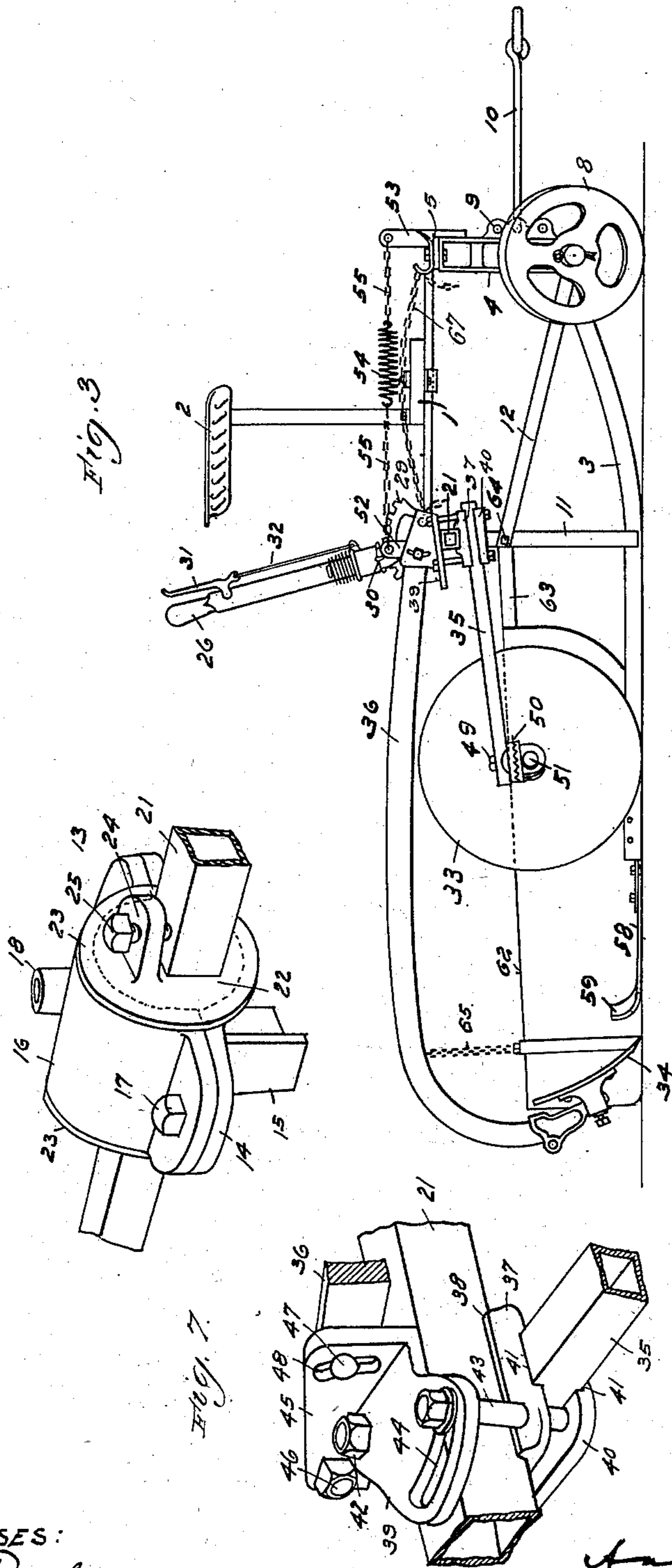
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ANDREW V. RYDER, OF BELLEVUE, OHIO, ASSIGNOR TO THE OHIO CULTIVATOR COMPANY, OF BELLEVUE, OHIO, A CORPORATION OF OHIO.

TWO-ROW LISTER-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 749,906, dated January 19, 1904.

Application filed November 6, 1902. Serial No. 130,282. (No model.)

To all whom it may concern:

Be it known that I, ANDREW V. RYDER, a citizen of the United States, residing at Bellevue, in the county of Huron and State of Ohio, have invented certain new and useful Improvements in Two-Row Lister - Cultivators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to cultivators, and more particularly to that class of cultivators known as "two-row lister - cultivators," and has for its object to provide a machine of this description having advantageous features, hereinafter set forth.

To this end my invention consists in certain novel features, which I will now proceed to describe and will then particularly specify in the accompanying claims.

In the accompanying drawings, Figure 1 is a plan view of a cultivator embodying my invention. Fig. 2 is a rear elevation of the same. Fig. 3 is a side elevation. Fig. 4 is a detail perspective view of a portion of the rear end of one of the shovel-beams and one of the fenders. Fig. 5 is a detail perspective view of one end of the seat-bar and its supporting and connected parts. Fig. 6 is a detail perspective view of a portion of the rock-shaft and one of the bearings. Fig. 7 is a detail perspective view of another portion of the rock-shaft and of the devices connecting the shovel-beam and disk-beam therewith; and Fig. 8 is an end elevation of what is shown in Fig. 7, the shovel-beam and its clamping-bolt being omitted.

In a general way the structure consists, like most of its type, of two independently-movable cultivator-sections separately connected to the draft and connected by a seat-bar resting on them and with respect to which they are laterally and longitudinally movable. The seat-bar is indicated at 1 and is provided with a central seat 2, located between the cultivator-sections. Each cultivator-section comprises a runner-frame composed of two parallel runners 3, turned upward at their forward ends, where they are secured to brackets

4, united by a cross-bar 5, provided with longitudinal slots 6, in which the upper ends of the brackets 4 are adjustably secured. The adjustment of the brackets in this slotted cross-bar serves to increase or diminish the distance separating the two runners of each frame. Each bracket 4 is provided with a downwardly and outwardly extending sleeve-bearing 7 to receive a guiding and supporting wheel 8, preferably inclined, as shown, these wheels partaking of the lateral adjustment of the runner with which they are connected. Each bracket is provided with a clevis 9 to receive the draft-rods 10. From the middle portion of each runner 3 there extends upward a standard 11, connected by a brace 12 with the corresponding bracket 4 at the point of connection of the runner 3 therewith. On the upper end of each standard 11 is located a bearing-box 13, comprising a two-part casting, the lower member 14 of which is provided with a socket 15, by means of which it is secured to the upper end of the standard, said lower part 14 also having a half-bearing therein. The upper part 16 is also provided with a half-bearing and is connected with the lower part by means of bolts 17. The front bolt 17 passes through an upstanding sleeve 18, around which fits an eye on the rear end of a supporting-rod 19, the forward end of which is adjustably secured by a bolt 20 in the corresponding slot 6 of the front cross-bar 5.

Each cultivator-section is provided with a transverse rock-shaft 21, which is mounted in the bearings 13, said bearings being adjustable along the rock-shaft, so as to permit of the lateral adjustment of the runner-frames hereinbefore referred to. Preferably the rock-shaft 21 consists of a square tube having mounted to slide thereon a cylindrical journal 22, (indicated in dotted lines in Fig. 6,) said cylindrical journal being adapted to fit within the half-bearings of the two parts 14 and 16 of the bearing 13 and being provided with terminal flanges 23, which abut against the ends of said half-bearings. A lug 24 projects from one end of the journal 22 and is provided with a set-screw 25, by means of which the

journal may be clamped upon the rock-shaft. Near the inner end of the rock-shaft 21 there is adjustably secured a hand-lever 26, having a hub 27, secured to the rock-shaft by a set-screw 28. The body of the handle is inclined inward and upward, so as to extend to a point immediately adjacent to and slightly in the rear of the seat 2. The inner bearing 13 is provided with a notched quadrant 29, inclined to correspond to the inclination of the lever 26, and said lever is provided with a spring-controlled detent 30, adapted to engage the notched segment 29 and operated by the usual handle-lever 31 and connecting-link 32.

Each cultivator-section is provided on each side thereof with a disk 33 and a shovel 34, the former in advance of the latter, and having their respective beams 35 and 36 connected to the rock-shaft 21 near the respective ends thereof. This connection is effected as to each pair of beams 35 and 36 by the connecting devices shown in detail in Figs. 7 and 8. They comprise a clamping-plate 37, adapted to fit the inner side of the rock-shaft 21 and having retaining-ribs 38 to fit against the sides thereof, and a clamping-plate 39, having a flat under side and fitting on top of the rock-shaft 21. A third clamping-plate 40 is located below the clamping-plate 37, and the disk-beam 35 fits between the clamping-plates 37 and 40, which are preferably grooved or recessed, as shown at 41, to receive said beam, the same being preferably of square tubing, as shown. Bolts 42 and 43 pass through the three plates on opposite sides of the rock-shaft 21, the former passing through an aperture in the top plate 39 and the latter passing through a curved slot 44 in said plate. By reason of this construction the plate 39 is adapted to turn around the bolt 42 as a pivot to adjust the angular relation to the line of draft of the shovel-beam, which is connected thereto, so as to swing the shovel in toward or outward from the plants. The plate 39 is provided at its inner margin with an upstanding flange 45, against which the shovel-beam 36 is clamped by means of bolts 46 and 47, the latter passing through a slot 48 in the flange, so that the shovel-beam may turn around the bolt 46 as a pivot to adjust the shovel vertically and may be clamped after adjustment by the bolt 47. The disk-beam 35 is provided at its rear end with a vertical pivot 49 and ratchet-clamp 50, by means of which the journal 51 of the disk 33 is so connected to the beam that it may be turned at any angle in either direction so as to throw the soil away from or toward the plants.

It will thus be observed that the disks may be adjusted nearer to or farther from the plants by their adjustment along the rock-shaft, that their angle may be changed, as desired, and that they may be raised and lowered, as desired, by the rotation of the rock-

shaft. It will further be noted that the shovels not only partake of all of these adjustments of the disks, but are also adjustable both vertically and laterally independently of the adjustments arising from the movements of the connecting devices along the rock-shaft or from the rotation of this latter. In this way a wide range of variation in the arrangement of the cultivating devices relatively to each other and to the soil and plants may be obtained.

In order to facilitate the operation of the rock-shaft and lighten the labor of lifting the cultivating devices and their beams by means of the hand-levers, each cultivator-section has its rock-shaft provided, preferably about midway of its length, with a projecting arm 52, while the front cross-bar 5 is provided with a similar projecting arm 53. A lifting-spring 54 is connected to these two arms, preferably by means of intermediate chains or other suitable connections 55, and this spring serves in an obvious manner to lessen the exertion required to lift the disks and shovels.

Each runner 3 is provided at its lower end with a flattened rearward extension 56, to the under side of which is pivoted, by means of a bolt 57, a weed-cutting knife 58, the body of which is horizontal, or approximately so, the rear end being curved upward, as indicated at 59. The runner extension 56 is provided with a curved slot 60, through which there extends upward from the knife 58 a clamping-bolt 61, so that the knife may be adjusted to a greater or less angle to the line of draft. The upwardly-turned rear portion 59 of the knife serves to throw a portion of the soil toward the plants, and the amount thus thrown may be determined by varying the angular position of the knives.

62 indicates a fender lying between the cultivating devices and the plants and serving to protect the latter from clods or from an excess of earth. This fender may be either of the inverted-U form shown or its operative side portions may be suitably connected in any way, so as to straddle and not injure the plants. Arms 63 extend from the forward ends of these fenders to the runner-frame, to which they are pivoted at 64, the fender being free to move vertically at its rear end and the arms being sufficiently elastic to permit the lateral adjustment of the runners, hereinbefore referred to. The rear end of each fender is provided with chains 65, by means of which it may be adjustably connected to suitable projections 66 on the rear ends of the shovel-beams 36. By reason of this construction the rear ends of the fenders may be raised or lowered while the machine is in operation by shortening or lengthening the chains 65, and their distance relatively to the ground may be maintained, irrespective of the particular adjustment of the shovel-beams, by a

corresponding variation in the length of the chains. These chains also serve to lift the fenders when the shovel-beams are lifted from the ground when the machine is not in operation.

The seat-bar 1 rests upon the supporting-rods 19, so as to be free to move thereon, and its movements are limited by means of a chain 67, connected to the front cross-bar 5 and rock-shaft 21 at its front and rear ends, respectively. The seat-bar 1 is provided on its upper side with a longitudinal rod 68, extending between projections 69, to which it is secured, said rod passing through a link 70 of the chain 67, so as to limit not only the forward and rearward but also the lateral movements of the seat-bar 1. The end connections of the chain 67 are preferably adjustable—as, for instance, by means of hooks 71 and 72, with which any desired link of the chain 67 may be connected, and these hooks are preferably formed in one piece with the projections 53 and 52, respectively. It will be noted that the seat-bar is supported between the supporting and guiding wheels and those portions of the runners which rest upon the ground, so that by shifting said seat-bar forward or backward the amount of weight distributed upon the runners may be varied, so as to vary the pressure upon the cultivating devices by means of which they are forced into the ground.

The general operation of the cultivator will be readily understood, the cultivator-frames, following their respective lists or furrows, being guided by the guiding and supporting wheels and supported by said wheels and the runners. The runner-frames may be laterally adjusted to suit the width of the furrow and the conditions of cultivation, and although the rock-shaft frame forms an essential element of the lateral bracing of the runner-frames of each cultivator-section this lateral adjustment of the runners relatively to each other may be readily effected by reason of the construction which I have devised. The various adjustments of the cultivating devices have been heretofore specifically pointed out. It should be noted, however, that the construction is such that the cultivating devices may be readily lifted from the ground at any time when such lifting is required and that this operation is facilitated by the position of the lifting-levers and by the employment of the lifting-springs. When the cultivating devices are thus lifted, the machine as a whole is firmly and properly supported upon the runners and wheels, and its stability is in no wise affected by such lifting.

It is obvious that various modifications in the details of construction may be made without departing from the principle of my invention, and I therefore do not wish to be understood as limiting myself to the specific structural details hereinbefore described, and shown in the accompanying drawings.

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

1. A two-row lister-cultivator, comprising two runner-frames and a seat-bar connecting the same and movable relatively thereto, each runner-frame being provided with a transverse rock-shaft having an operating-lever located adjacent to the seat, each rock-shaft being provided near its ends with couplings longitudinally adjustable on the rock-shaft, rearwardly-extending beams connected with said couplings and provided respectively with cultivating disks and shovels, the shovel-beams being pivotally connected to said couplings, so as to be independently adjustable both vertically and laterally, substantially as described.

2. A two-row lister-cultivator, comprising two runner-frames and a seat-bar connecting the same and movable relatively thereto, each runner-frame being provided with a transverse rock-shaft having an operating-lever secured on the inner end thereof outside the runner-frame, and cultivating devices having their beams connected to the rock-shafts, the rock-shafts lying rearward of the seat, and the operating-levers being inclined upward and inward to a point adjacent to and immediately in the rear of the seat, substantially as described.

3. In a lister-cultivator, the combination, with a runner-frame and a rock-shaft thereon, of a connecting device comprising three clamping-plates having clamping-bolts located on opposite sides of the rock-shaft, a disk-beam clamped between the first and second of said plates, and the rock-shaft clamped between the second and third of said plates, the third of said plates being provided with a slot for the passage of one of the clamping-bolts, whereby said plate has a pivotal adjustment around an axis transverse to the rock-shaft, and a shovel-beam secured to said third plate, substantially as described.

4. In a lister-cultivator, the combination, with a rock-shaft, of a beam-connecting device comprising three plates and clamping-bolts located on opposite sides of the rock-shaft, a disk-beam clamped between the first and second of said plates, the rock-shaft being clamped between the second and third of said plates, said third plate being provided with a slot for one of the clamping-bolts, whereby it is given a pivotal adjustment around an axis at right angles to the rock-shaft, said third plate being provided with a vertical flange, slotted as described, and a shovel-beam pivotally connected to said flange and having a clamping-bolt extending through said slot, substantially as described.

5. A two-row lister-cultivator, comprising a transverse seat-bar and two runner-frames movable relatively thereto, each frame comprising two runners, a front cross-bar con-

5 nected with the same, and a rock-shaft located rearwardly thereof, said rock-shaft being provided with cultivating devices, an operating-lever, and a projection, the front cross-bar being also provided with a projection, and a lift-spring connecting said projections, substantially as described.

10 6. A two-row lister-cultivator, comprising two runner-frames and a seat-bar connecting the same and movable relatively thereto, each runner-frame being provided with a transverse rock-shaft having an operating-lever lo-

cated adjacent to the seat, cultivating devices having their beams connected to the rock-shaft, so as to be raised and lowered thereby, and lift-springs to aid in the operation of the rock-shafts, substantially as described. 15

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

ANDREW V. RYDER.

Witnesses:

JESSE VICKERY,
D. V. BOOKER.