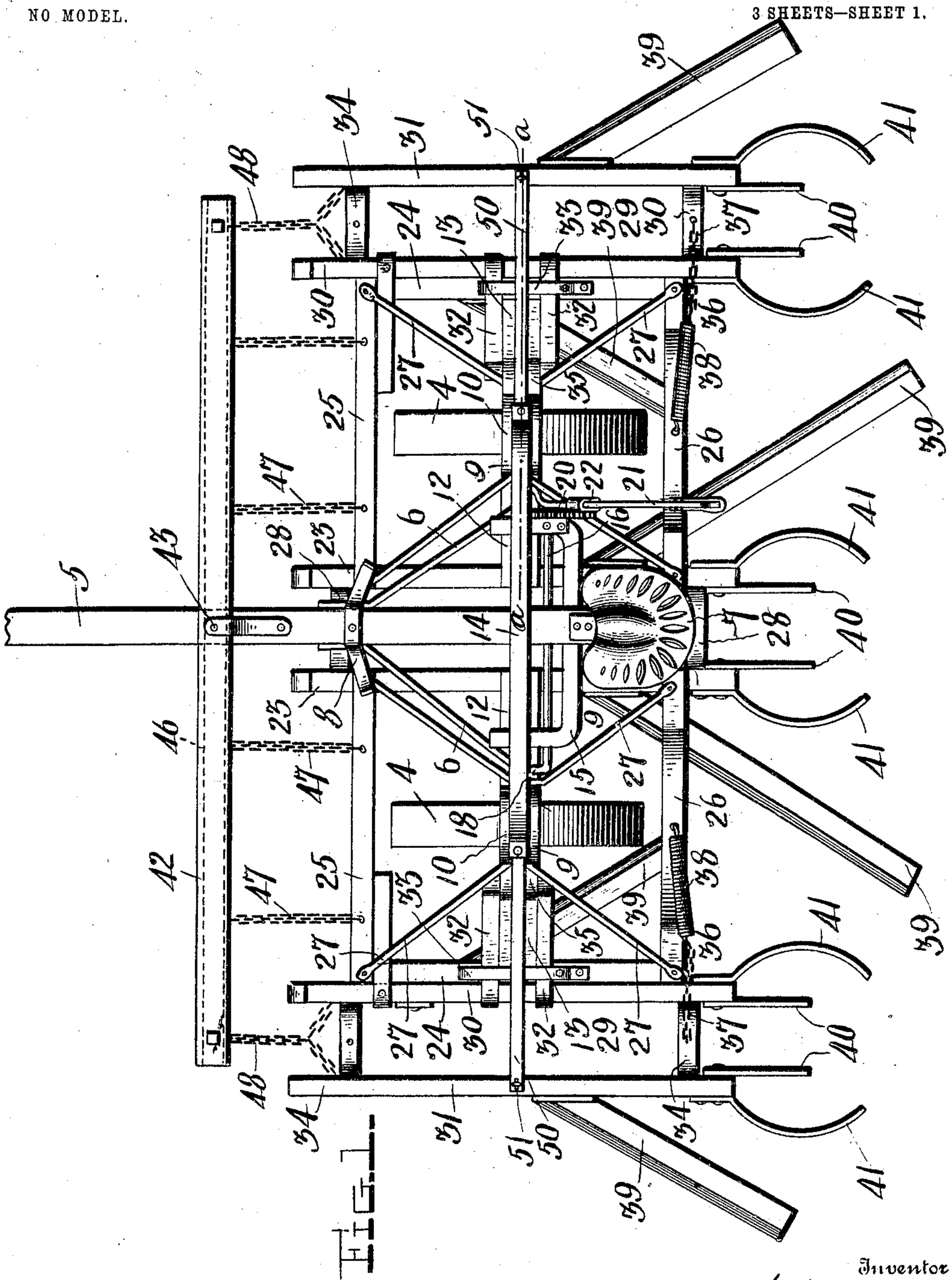
No. 770,420. PATENTED SEPT. 20, 1904.

W. F. COCHRAN.

THREE ROW CULTIVATOR.

APPLICATION FILED APR. 13, 1904.

NO MODEL. 3 SHEETS—SHEET 1.



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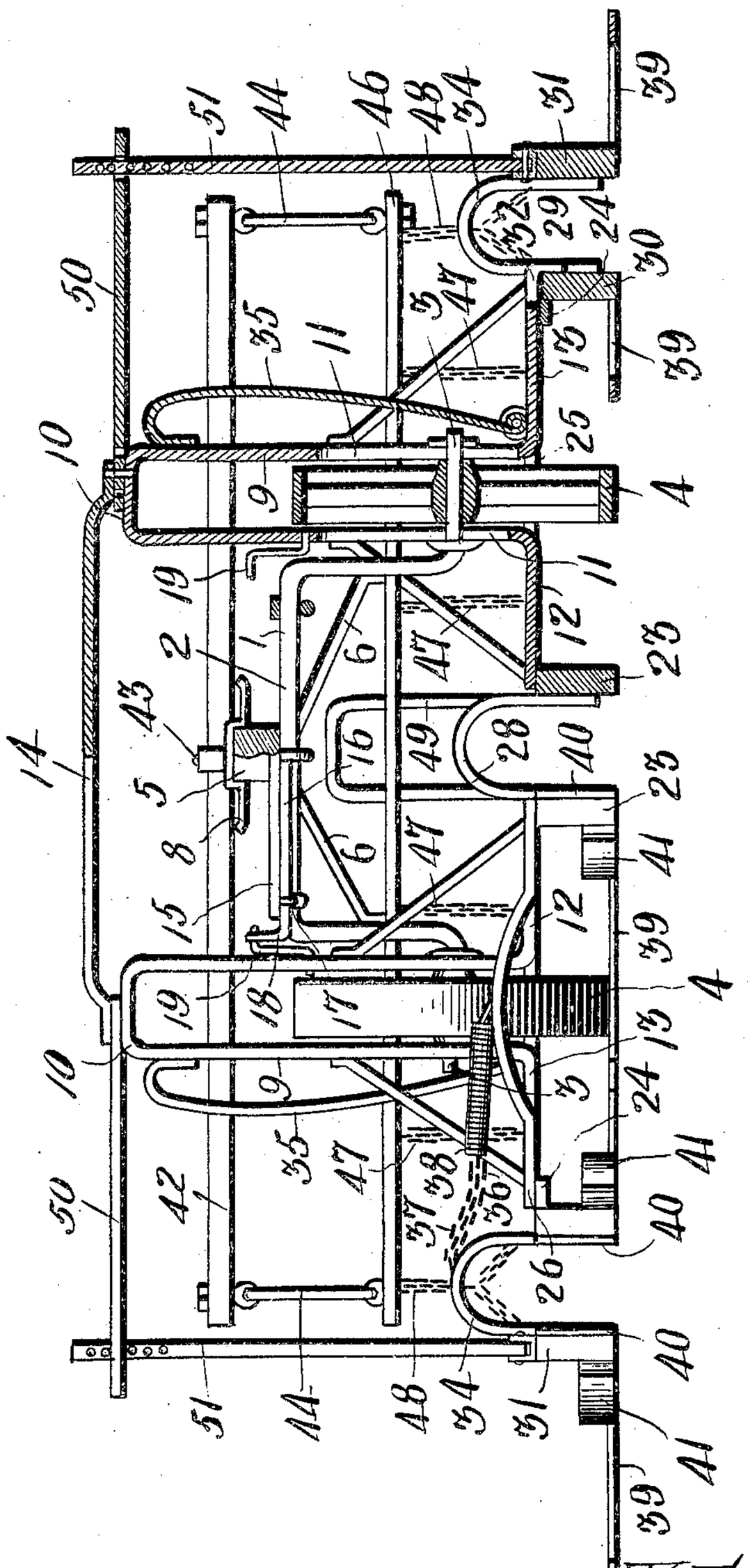
NO MODEL. 3 SHEETS—SHEET 2.

FIG. 2.



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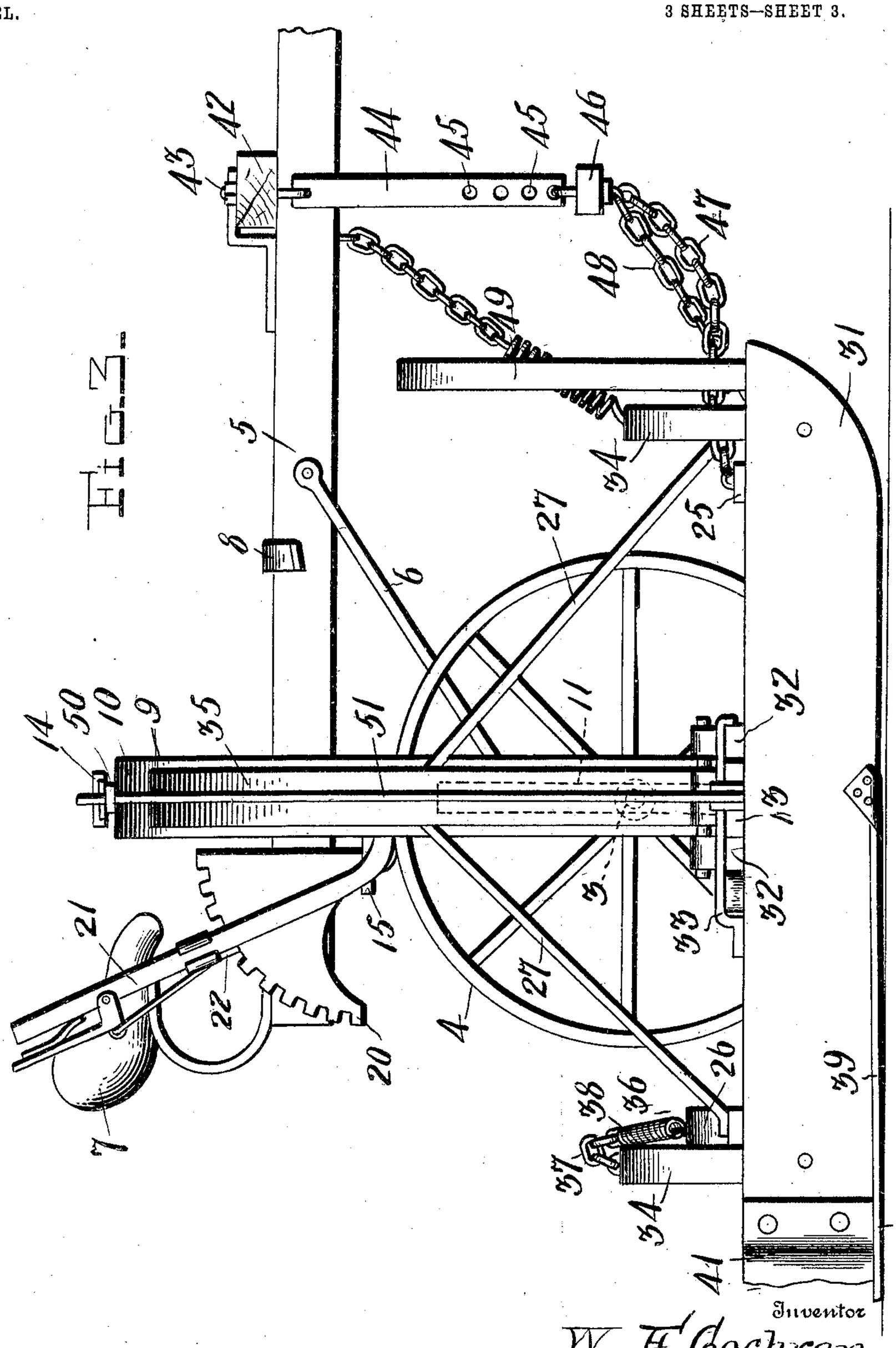
NO MODEL. 3 SHEETS—SHEET 3.

FIG. 2.



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No. 770,420. Patented September 20, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM F. COCHRAN, OF OSBORNE, KANSAS.

THREE-ROW CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 770,420, dated September 20, 1904.

Application filed April 13, 1904. Serial No. 203,025. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. COCHRAN, a citizen of the United States, residing at Osborne, in the county of Osborne and State of Kansas, have invented certain new and useful Improvements in Three-Row Cultivators; and I do 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 invention is an improved three-row cultivator; and it consists in the construction, combination, and arrangement of devices hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a top plan view of a cultivator embodying my improvements. Fig. 2 is partly a rear elevation and partly a vertical transverse sectional view of the same, taken on the plane indicated by the line *a a* of Fig. 1. Fig. 3 is a side elevation of the same.

The axle 1 is arched, as at 2, and has spindles 3 at its ends, on which are mounted ground-wheels 4. The tongue 5 is secured near its rear end to the center of the arched axle, and braces 6 connect the tongue to the vertical portions of the axle-arch. A seat 7 is mounted on the rear end of the tongue, which projects in rear of the axle, and the tongue is provided with foot-rests 8 at a suitable point in advance of the axle.

A frame 9 is vertically movable to raise and lower the cultivating devices. I will now describe the said frame as here shown.

A pair of arches 10 of substantially inverted-U shape have vertical slots 11, through which the spindles of the axle extend. At the lower ends of the vertical portions of the said arches are horizontal arms 12 13, which respectively extend inwardly and outwardly. The upper ends of the said arches 10 are connected together by a bar 14. A yoke-bar 15 is secured to the tongue on its under side near its rear end and is secured to the arched axle. A rock-shaft 16, which is horizontally disposed, is journaled in bearings 17, with which the yoke-bar is provided, and has arms 18 at its ends, connected to the respective arches 10 by means of links 19. A segment 20 is secured to the yoke-bar, and the rock-shaft has a lever 21 secured thereto and provided with a locking-dog 22 of the usual construction to coact with the segment. By means of the rock-shaft, lever, and links the frame may be raised and lowered, as will be understood, and the segment and locking-dog enable the lever to be locked at any desired position, so that the frame may be locked at any vertical adjustment.

A pair of center runners 23 are secured to the inner ends of the arms 12, the latter bearing on the upper sides of said runners near the center thereof. Bars 24 are secured to the outer ends of the arms 13. Cross-bars 25 26 connect the front and rear ends, respectively, of the bars 24 to the center runners. Said cross-bars 26 are arched, as shown. Braces 27 connect the ends of said cross-bars to the arches 10. Arches 28 connect the center runners together at their front and rear ends.

Outer runners 29 comprise inner members 30 and outer members 31. The former are provided at their centers with inwardly-extending arms 32, which bear on the front and rear sides of the arms 13 of arches 10 and operate in guide-keepers 33. The outer members 31 are connected to the inner members 30 by arches 34. Spring-arms 35 have their upper ends secured to the outer sides of the arches 10 and their lower ends connected to the inner ends of the arms 32. Said springs press the outer runners inwardly and keep their inner members 31 normally against the bars 24. Elastic links 36, here shown as chains 37 and coil-springs 38, connect the centers of the rear cross-bars 26 and the rear arches 34 of the outer pairs of runners.

Diagonally-disposed blades 39 are secured to the runners and extend outwardly and rearwardly from the lower sides thereof. Said blades operate just under the surface of the soil between the rows which are straddled by the pairs of runners and serve to loosen the soil and to cut off and destroy the weeds. Fenders 40 are secured to and project rearwardly from the runners, and reversely-curved blades 41 are also secured to the runners and

extend rearwardly therefrom and project in rear of the fenders and serve to draw the loose earth to the rows.

An evener-tree 42 has its central portion pivotally connected to the tongue, as at 43. Pivotally connected to the ends of the evener-tree are draft-links 44, which depend therefrom. These draft-links have openings 45, which enable the doubletrees of the teams to be attached thereto at any desired vertical adjustment, and the lower ends of the draft-links are flexibly connected to the ends of a draft-bar 46. The front cross-bars 25 are connected to the draft-bar by means of draft-chains 47, and draft-chains 48 connect the front ends of the outer runners to the ends of the draft-bar.

On the front ends of the center runners are secured the lower ends of an inverted-**U**-shaped arm 49.

When the cultivator is at work, the frame is lowered, so that the lower sides of the runners sink to some extent in the soil. The wheels travel on the surface of the soil and tend to support the frame, the runners, and the soil-stirring and weed-cutting devices. Hence the runners and the earth-working and weed-cutting devices may be caused to run at any desired depth.

To enable the cutter to be turned at the end of a row or to be readily drawn from place to place, the frame is elevated to raise the runners and the soil-stirring and weed-cutting devices above the surface of the soil. When the frame is thus elevated, the vertical arm 49 bears against the under side of the tongue and prevents the frame from sagging, so as to depress the rear ends of the runners and the devices attached thereto. To keep the rear ends of the runners properly depressed when the cultivator is at work, I provide spring-arms 50, which have their inner ends secured to the upper ends of the arches 10 and are provided at their outer ends with rods 51, which bear on the outer members of the outer pairs of runners.

The spring-arms 35 and the elastic links 36, attached to the outer pairs of runners, enable the latter to move laterally, as may be required by slight deviations in the rows.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a cultivator, the combination of a frame, runners connected thereto for lateral movement, and springs to normally draw the runners inwardly.

2. In a cultivator, the combination of a frame, laterally-movable runners having arms slidably connected to the frame, and a spring connected to said arms and serving to normally draw the runners toward the frame.

3. In a cultivator, the combination of a supporting-truck, a vertically-movable frame, runners carried by the frame, and means at the front side of the frame to limit the upward movement of the front side of the frame as the latter is raised and thereby prevent the rear ends of the runners from sagging.

4. In a cultivator, the combination of a supporting-truck, a vertically-movable frame, runners carried by the frame, and an arm extending upwardly from the front side of the frame, to contact with a member of the truck when the frame is raised and prevent the rear ends of the runners from sagging.

5. In a cultivator, a frame having runners intermediate the sides thereof, pairs of runners spaced apart on its outer sides, yieldable means to permit said outer pairs of runners to move laterally toward and from the intermediate runners, and connections including springs between said frame and the outer pairs of runners, substantially as described.

6. In a cultivator, the combination of a supporting-truck having an axle and ground-wheels, a vertically-movable frame having intermediate runners and provided with vertically-slotted arches astride of the wheels, the said axle being vertically movable in said slotted arches, laterally-movable runners at the outer sides of the frame, and spring-arms, attached to the said arches and connected to the outer runners for the purpose set forth.

7. In a cultivator, the combination of a supporting-truck having an axle and ground-wheels, a vertically-movable frame having intermediate runners, connections between said truck and said vertically-movable frame to guide the latter in its vertical movement, laterally-movable runners at the outer sides of the frame, and springs connecting said supporting-truck and the outer runners, for the purpose set forth.

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

WILLIAM F. COCHRAN.

Witnesses:
J. K. MITCHELL,
W. W. PARSONS.