

No. 615,576.

Patented Dec. 6, 1898.

J. L. SCOTT.
DISK CULTIVATOR.

(Application filed Sept. 12, 1896.)

3 Sheets—Sheet 1.

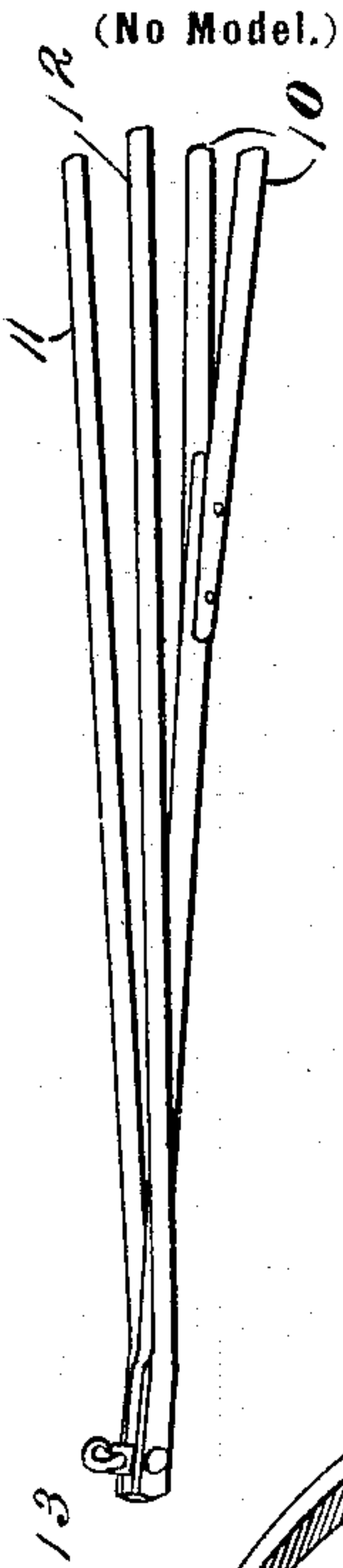


Fig. 1.

Witnesses

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3. Sheets—Sheet 2.

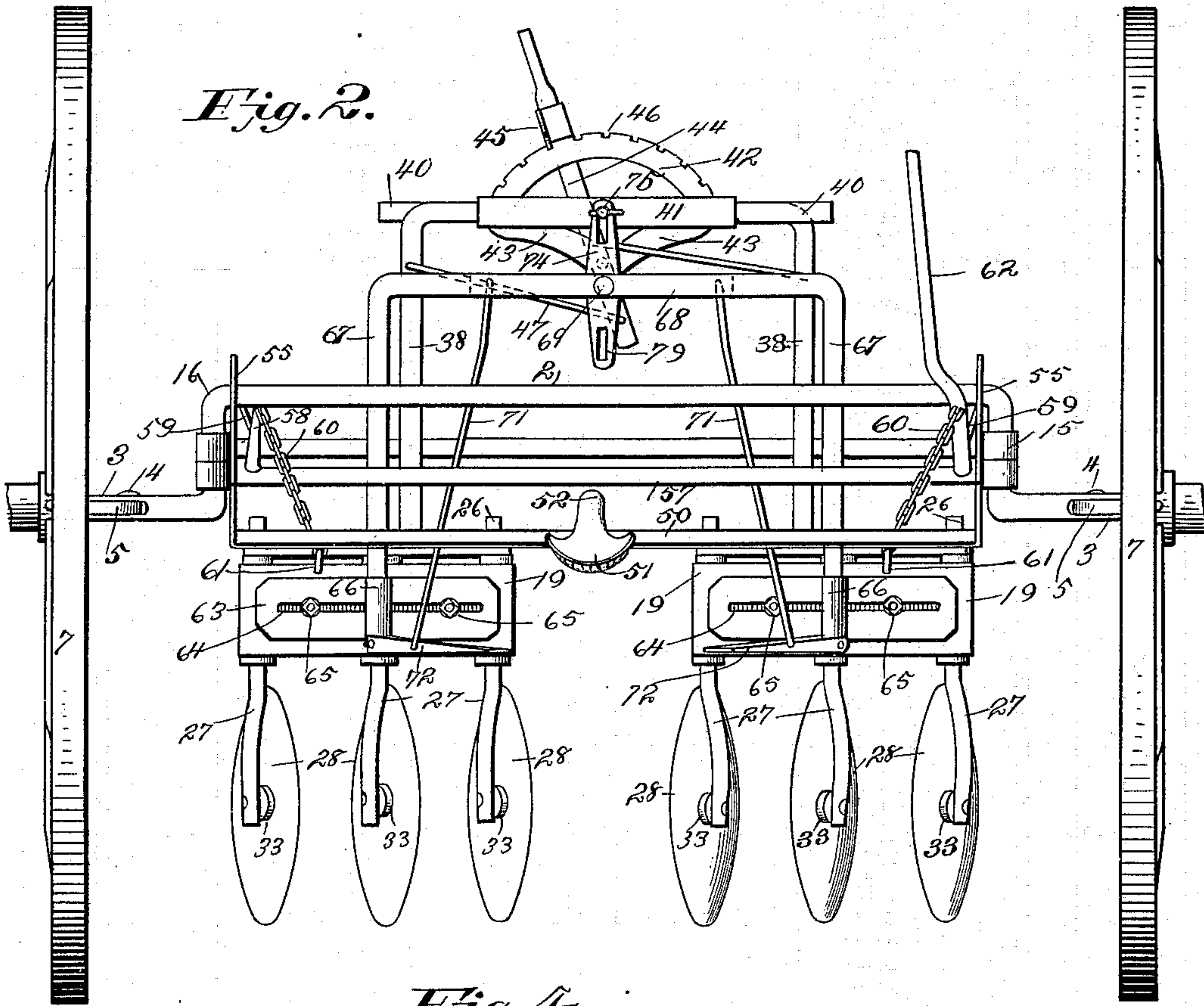


Fig. 4.

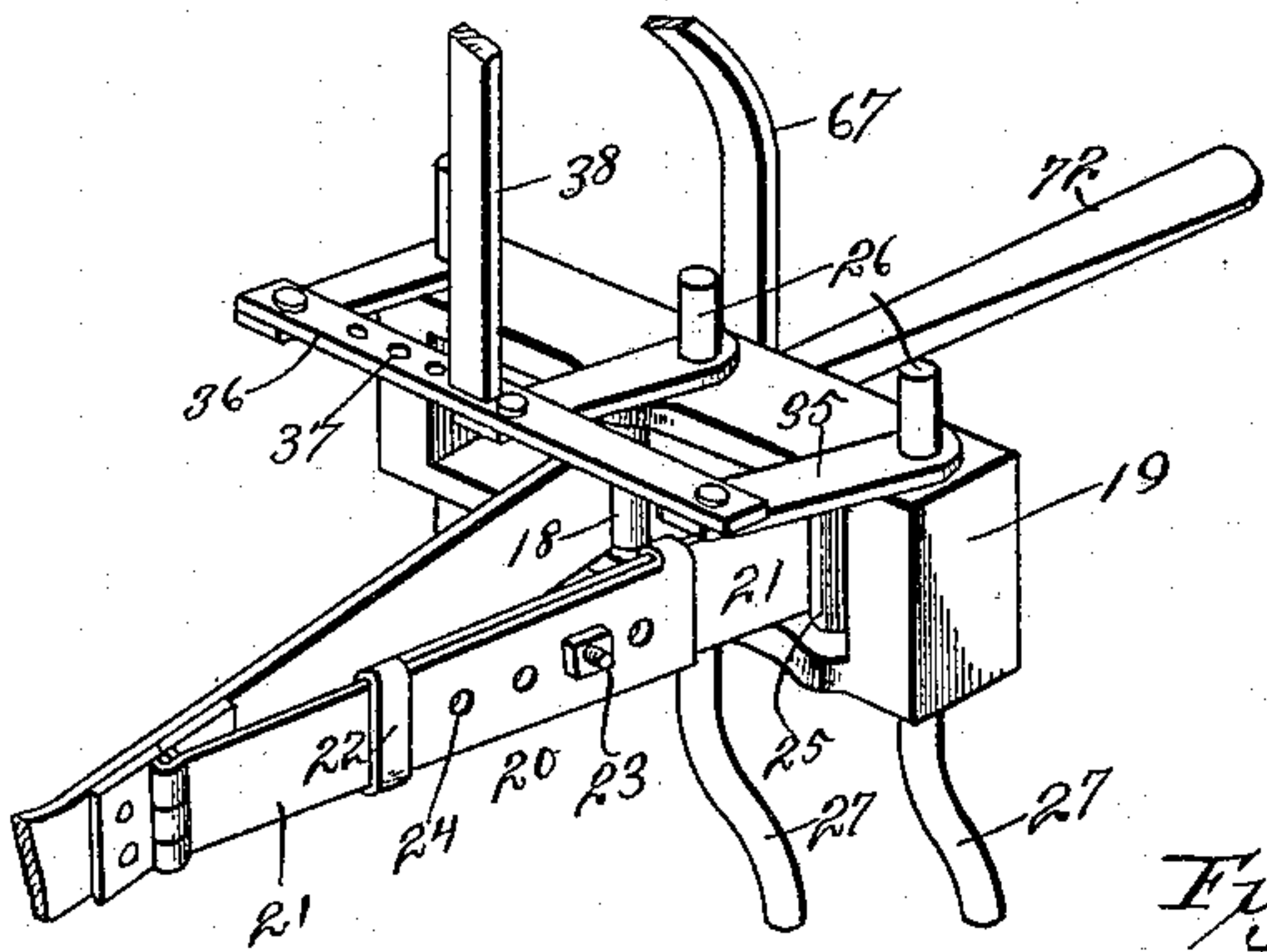


Fig. 5.

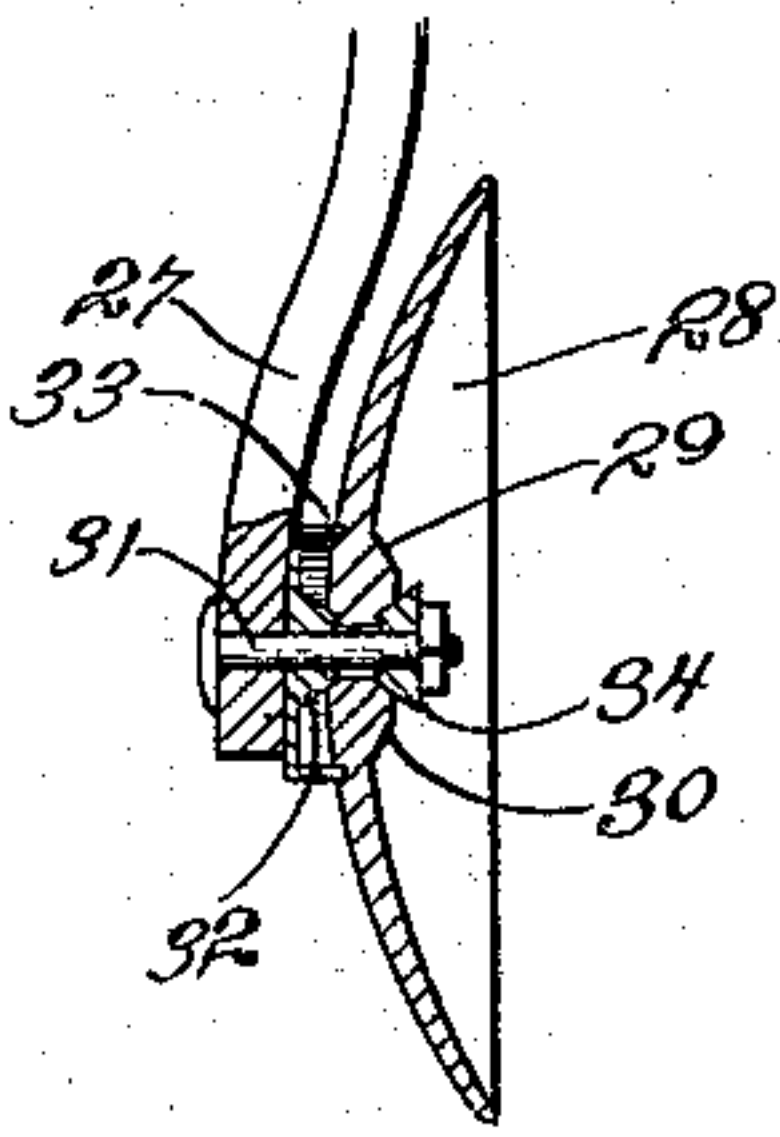
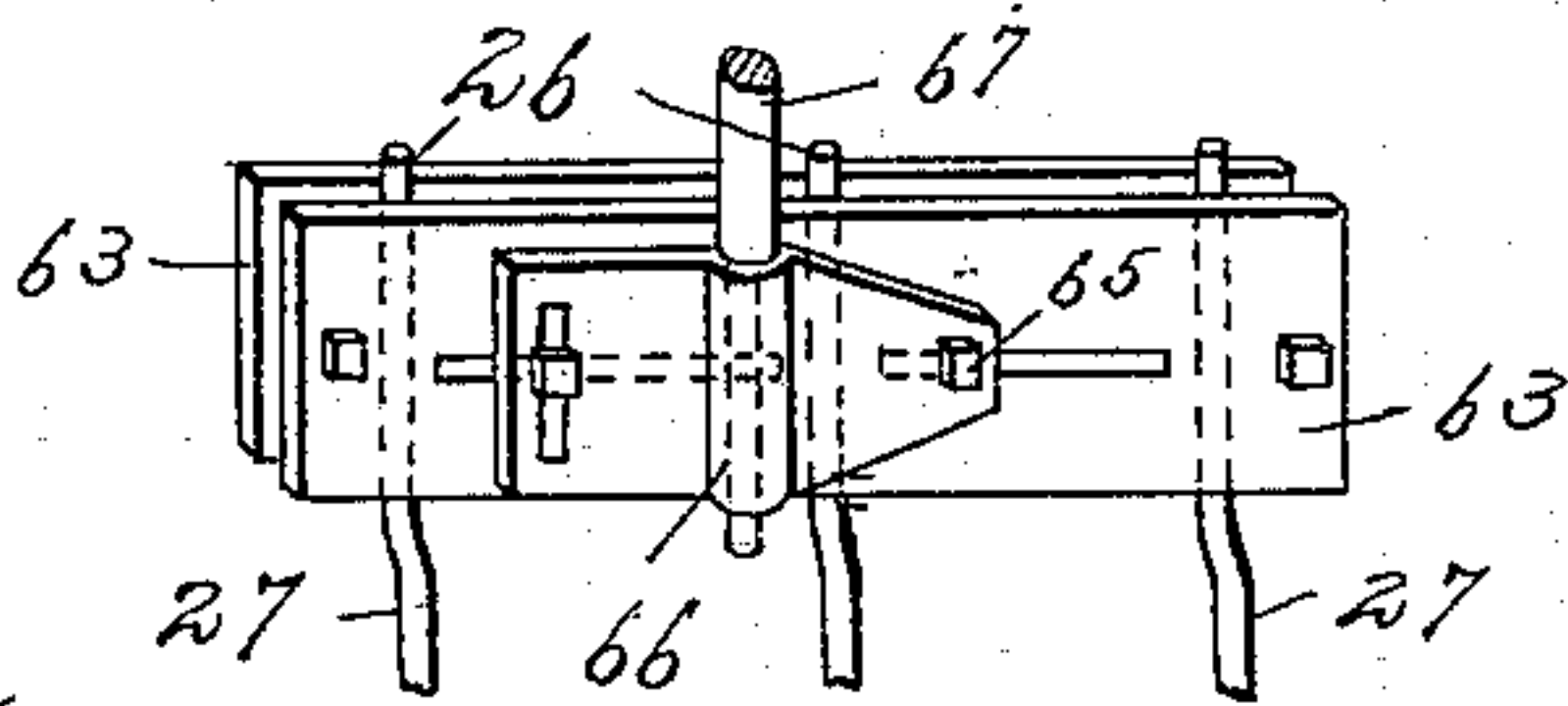


Fig. 8.



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3 Sheets—Sheet 3.

Fig. 3.

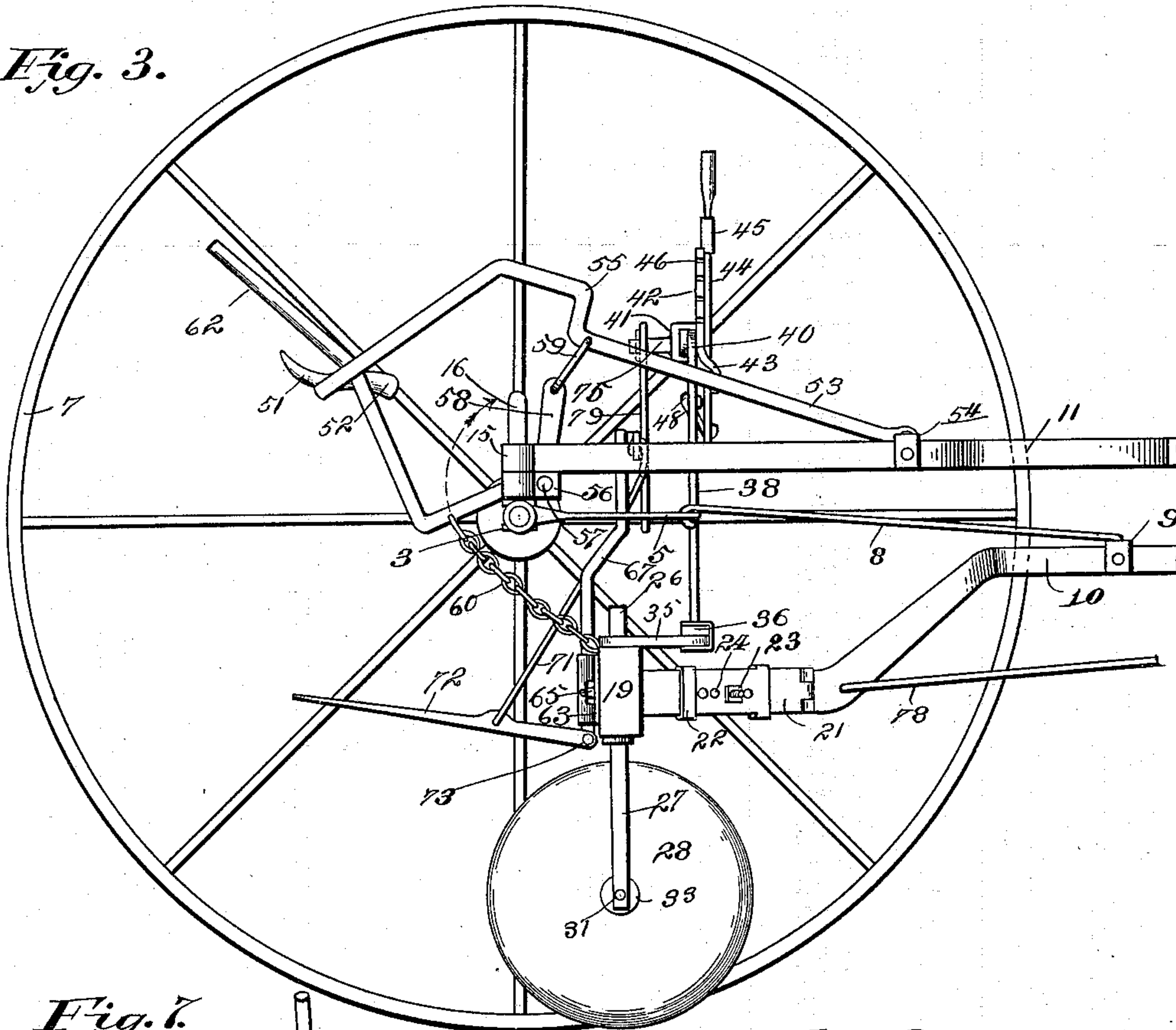


Fig. 7.

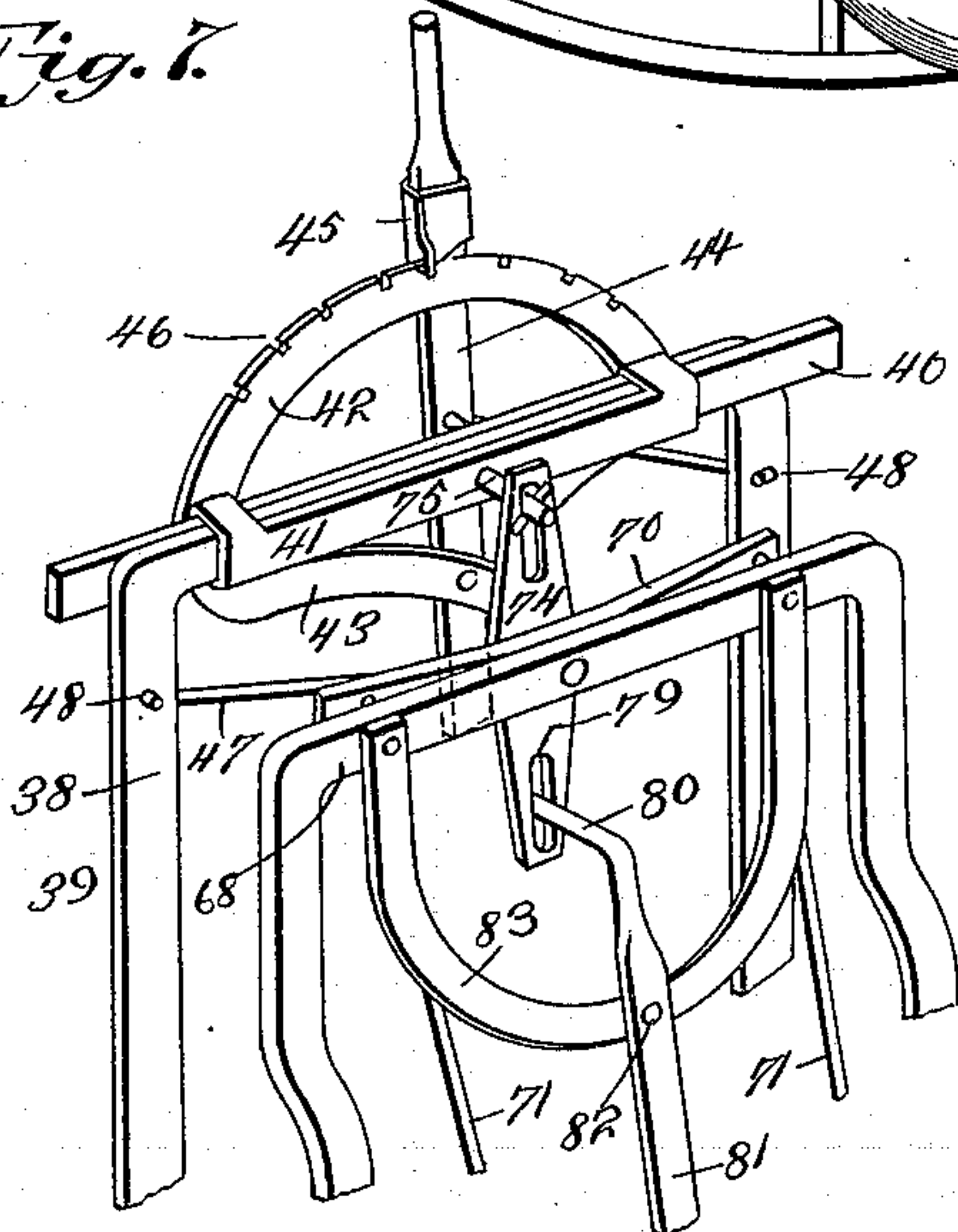
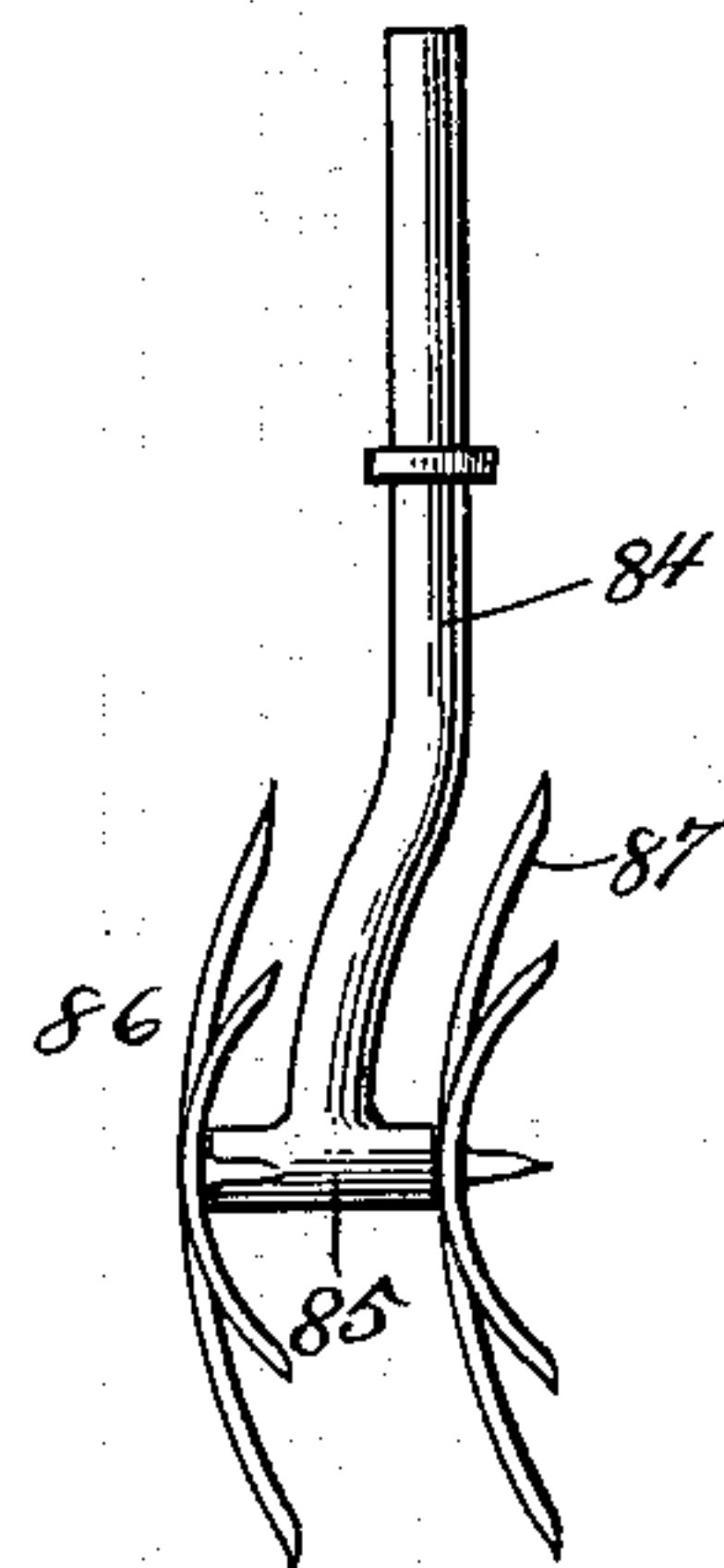


Fig. 6.



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UNITED STATES PATENT OFFICE.

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DISK CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 615,576, dated December 6, 1898.

Application filed September 12, 1896. Serial No. 605,651. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. SCOTT, a citizen of the United States, residing at Martinsburg, in the county of Pike and State of Illinois, have invented a new and useful Disk or Flange Cultivator, of which the following is a specification.

This invention relates to cultivators of the type known as "straddle-row wheel-cultivators;" and the object of the invention is to provide a combined riding or wheel cultivator and walking-cultivator, the construction admitting of the machine being readily converted into one or the other forms above noted.

One object of the invention is to provide means whereby the disks may be shifted from side to side and changed as to their angle, thus enabling the operator to follow the plants, although the rows may be crooked or curved. It is also the object of the invention to make this operation automatic. The disks are capable of being set at various angles for throwing the soil with more or less force, and the disks may be raised entirely clear of the ground by means of the ready control of the driver, who may facilitate such action by his own weight upon the seat. These and other objects of the invention will be clearly pointed out in the course of the subjoined description.

The invention consists in a combined wheel and walking cultivator embodying certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims hereto appended.

In the accompanying drawings, Figure 1 is a perspective view of a wheel-cultivator constructed in accordance with the present invention. Fig. 2 is a rear view thereof. Fig. 3 is a side elevation of the machine. Fig. 4 is an enlarged detail perspective view showing the connection of the tongue and one of the disk-heads. Fig. 5 is an enlarged vertical section showing the manner of mounting a disk on a standard. Fig. 6 is a view in elevation of a modified form of double disk. Fig. 7 is a detail perspective view showing the means for operating the yoke-sections when the machine is used as a walking-cultivator. Fig. 8 is a detail perspective view of the mechanism for adjusting the disk-heads.

Similar numerals of reference designate corresponding parts in all the views.

Referring to the drawings, 1 designates the main axle, which has its central portion arched or elevated, as indicated at 2, and its extremities slotted, as at 3, to receive on pivots 4 a pair of bell-crank levers 5, each of which has its outwardly-extending end formed into a spindle 6, upon which one of the carrying-wheels 7 is mounted. The forward ends of the levers 5 have connected thereto obliquely-extending connecting-rods 8, which attach at their forward ends to a tie-brace 9, connecting the forwardly-converging side portions 10 of a draft-tongue.

The machine-tongue 11 comprises rearwardly-diverging side bars 12, connected at their forward ends by means of a short horizontal bolt or clip 13, designed to receive the breast-yoke in the usual manner.

The side bars 12 diverge gradually toward the machine-frame and are connected by the cross-tie brace 14. They are then extended obliquely outward in opposite directions and thence backward in substantially parallel relation, where they are connected at the points 15 to the main axle 1, being bent around the upright portions 16 of said axle.

The auxiliary or draft tongue, consisting of the side bars 10, is formed similarly to the machine-tongue and is connected at its forward end to said machine-tongue by the same bolt which attaches the clip 13 to the tongue. At a point beneath the tie-brace 14 the side bars 10 of the draft-tongue are connected by a similar tie-brace 9, hereinabove referred to, and to which are attached the forward ends of the rearwardly-diverging connecting-rods 8. The rear ends of the side bars 10 are deflected downward, as shown at 17, and thence extended in a substantially horizontal line, where they connect pivotally at their rear ends, as at 18, to a pair of disk-heads 19. Each disk-head 19 is further connected to one of the side bars 10 by means of a longitudinally-extensible stay 20, consisting of two members or sections 21, each having an end loop 22, which straddles the other section, thus permitting the two sections to slide longitudinally upon each other, the said sections when adjusted being held by means of a transverse bolt 23, passing through any one of a

series of perforations 24 in both sections 21. The rear section is pivotally connected, as at 25, to the disk-head 19 at a point remote from the pivot 18 of the tongue, so that by length-
5 ening and shortening the stay 20 the angle of the disk-head 19 may be regulated.

Passing through and journaled in each disk-head 19 are the upright or vertical portions 26 of a series of standards 27, having mount-
10 ed on their lower ends rotary disks 28. By reference to Fig. 5 it will be seen that each disk 28 is provided with a hub 29, in each side of which is formed a conical seat or bearing 30 and also an opening for the passage of
15 a bolt or spindle 31. A cone-bearing 32 is interposed between the disk and the lower end of the standard 27 and is also provided with a peripheral flange 33, which works in a corresponding groove in the convex side of the
20 disk for preventing the admission of dirt, moisture, and other foreign matter to the bearing. Arranged upon the outer or concave side of the disk is a cone 34, and the bolt or spindle 31 passes through both cones and
25 also through the disk, whereby all of said parts are connected to the standard and any looseness or wear in the bearing may be taken up, besides causing the disk to rotate smoothly.

Mounted fast upon the upper portion 26 of each standard 27 is a crank-arm 35, and the outer ends of said crank-arms are all connected by a common connecting-bar 36, which
30 is provided with a longitudinal series of perforations 37 to receive the lower reduced end of one of the sections 38 of a sectional yoke 39. The yoke-sections 38 extend upward a suitable distance and are then bent to extend
35 horizontally, and the horizontal portions 40 of the yoke-sections overlap and slide upon each other, as clearly shown in Fig. 7. The portions 40 also slide through and are guided in the frame 41 of a notched segment 42. Connected to the segment 42 are downwardly-
40 converging arms or hangers 43, and pivotally mounted between the lower ends of said hanger-arms is a latch-lever 44, having a latch
45 near its upper end designed to engage notches 46 in the segment 42 for holding it at
50 any desired point of adjustment. The lever 44 is connected to the yoke-sections 38 by means of two rods 47, said rods connecting with the yoke-sections at the points 48 and with the lever at points above and beneath
55 the fulcrum of the lever, so that when the lever is vibrated in one direction the yoke-sections will be thrust apart and when vibrated in the opposite direction the yoke-sections will be drawn toward each other, and
60 as the sections are thus moved the standards of the disks will be correspondingly turned and the disks rocked to an angle commensurate with the movement of the hand-lever 44. By this means the dirt may be thrown
65 with greater or less force.

The rear parallel portions of the side bars 12 of the machine-tongue are connected in

advance of the axle by means of a cross-bar 49, and mounted pivotally upon said cross-bar is a U-shaped seat-frame 50, upon the
70 rear central and transverse portion of which is mounted a seat 51, having an elongated horn or tongue 52. The side arms or portions 53 of the seat-frame extend forward over the axle and connect pivotally at 54 with the
75 cross-bar 49. The seat 51 is located in rear of the machine-axle, and the side bars or arms 53 are deflected upward, as shown at 55, in order to pass over the axle and allow the seat-frame to be depressed, for a purpose which
80 will appear.

Journaled in brackets 56 on the axle 1 is a rock-shaft 57, having at or near each end a pair of crank-arms 58, arranged at an obtuse
85 angle to each other, one arm of each set extending forward from the rock-shaft and the other arm rearward. The forward arms are connected, by means of links 59, with the side bars or arms 53 of the seat-frame. The rear crank-arms 58 have connected thereto the
90 upper ends of a pair of lifting-chains 60, the lower ends of which are detachably connected to eyes 61 on the disk-heads 19. One of the rearwardly-extending crank-arms 58 is extended and carried upward to form a hand-
95 lever 62. The driver by pushing forward on the lever 62 draws on the chains 60 and elevates the disk-heads, together with the disks, &c., and at the same time the weight of the driver is also taken advantage of to depress
100 the rear end of the seat-frame, thereby gradually facilitating the lifting of the cultivating apparatus with relation to the carrying-frame and ground-wheels.

Mounted adjustably upon the rear side of
105 each disk-head 19 is a spacing-plate 63, having one or more horizontal longitudinal slots 64 for the reception of two or more bolts 65, which pass through the disk-head 19 and also through vertical transverse slots in auxiliary
110 plates 63', arranged in rear of the plates 63. About centrally each plate 63' is formed with a vertical sleeve or bearing 66 for the lower end of one of the vertical side arms 67 of a yoke 68 of U-shape, the horizontal por-
115 tion of which is located in a higher plane than the axle and in a slightly-lower plane than the portions 40 of the section-wheel heretofore described. The yoke 68 is rigid throughout and serves to maintain the same
120 distance between the disk-heads. The disk-heads proper, however, may be adjusted toward and away from each other by loosening the bolts 65, which will allow the disk-heads to be slid horizontally with relation to the
125 plates 63, the latter not being capable of any movement toward and away from each other, so that when the bolts are made fast there can correspondingly be no movement of the disk-heads 19 toward and away from each
130 other. By making the vertical transverse slots in the outer ends of the disk-heads 19 the disk-heads may be adjusted up and down by means of the bolts for changing the an-

gles of said heads, and consequently the angles of the disks themselves.

Fulcrumed on a centrally-located pin 69 on the yoke 68 is a horizontal lever 70, which is vibrated by means of two connecting-rods 71, which extend downward and slightly rearward, where they connect pivotally at their lower ends to a pair of foot-levers 72, pivotally mounted at their forward ends 73 on the lower extremities of the vertical arms 67 of the yoke 68, the foot-lever 72 being arranged in convenient position below the seat 51. Extending upward from the center of the lever 70 is a slotted arm 74, and in the slot of said arm is received a pin 75, which connects to the frame 41 of the notched segment 42. Thus by depressing one or the other of the foot-levers the sectional yoke as a whole is moved laterally from side to side in a plane at right angles to the line of draft of the machine, the effect of which is to cause the angles of the disks to change, thereby directing the disks toward one side or the other of the machine, the disks collectively and bodily being adapted to move from one side of the machine toward the other on account of the auxiliary or draft tongue being free to swing in a corresponding direction and without affecting the machine tongue, frame, and carrying-wheels.

As the disks collectively move from one side of the machine toward the other the draft-tongue operates through the agency of the rods 8 to vibrate the bell-crank levers 5, thus canting or turning the carrying-wheels 7 and causing the machine as a whole to move laterally or depart from a straight line in which the machine ordinarily moves.

Pivoted intermediate its ends to the cross-tie brace 14 is an evener or equalizer-bar 75, and pendent from the projecting ends of said bar are clevis-bars 76, provided with longitudinal series of openings 77 for the attachment of the draft-animals. The lower ends of the clevis-bars 76 have attached thereto draft-rods 78, which at their rear ends connect to the portions 17 of the auxiliary or draft tongue, as clearly shown in Figs. 1 and 3, thus enabling the draft to be sustained directly upon the disk-heads and relieving the frame from consequent and unnecessary strain.

The machine as above described is designed to be used as a wheel-cultivator. In order to use it as a walking-cultivator, the chains 60 are disconnected at their lower ends from the disk-heads and the equalizer or evener 75 is detached from the tie-brace 14 and connected pivotally to the lower tie-brace 9. The bolt which connects the forward ends of the two tongues is then taken off, so that the tongues may be disconnected. If desired, the foot-levers 72 may be disconnected from the lower ends of the yoke 68. In order now to provide for the lateral shifting of the sectional yoke, the lever 70 is provided with a central pendent slotted arm 79, and in the slot of said arm is

received the upper horizontal bent end 80 of a hand-lever 81, which may be operated by a person walking in rear of the machine. The lever 81 is fulcrumed at the point 82 upon a pendent U-shaped hanger-bar 83, fastened at its ends to the yoke 68.

In Fig. 6 I have shown a modified form of disk and a different manner of mounting the same. In said figure, 84 designates the standard, which is provided at its lower end with a sleeve 85, in which is journaled a shaft, on the opposite ends of which are fixedly secured disks 86, which consist of a plurality of fingers 87, radiating from a common hub and curved to conform substantially to the curvature of an ordinary disk, such as is shown in Fig. 5. With this form of disk the soil is broken up and pulverized by the fingers 87 and twice the number of disks are provided.

The machine hereinabove described is exceedingly effective in operation and to a considerable extent automatic. The driver is enabled to follow the irregular line of the rows of plants, which may be curved or jagged, and this may be accomplished by pressing down one foot-lever or the other, according to the direction in which the irregularity in the row extends. This not only changes the pitch of the disks at both sides of the row, but also sets the carrying-wheels slightly at an angle to the line of draft, thus enabling the machine as a whole to move toward one side or the other. It will also be seen that the distance between the two gangs of disks may be regulated at will and that they may be elevated or depressed to any desired extent. It will be also understood that the machine hereinabove described is susceptible of various changes in the form, proportion, and minor details of construction, which may accordingly be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a cultivator, the combination with the machine-frame, and carrying-wheels, of a pair of disk-heads, disks carried thereby, spacing-plates adjustably connected to the disk-heads, auxiliary transversely-slotted plates also adjustably connected to the disk-heads and a yoke connecting said spacing-plates, substantially as described.

2. In a cultivator, the combination with a pair of independent disk-heads, and disks carried thereby, of spacing-plates adjustably secured to said disk-heads, and a yoke connecting said spacing-plates, substantially as described.

3. In a cultivator, the combination with two independent disk-heads, of a series of disks for each disk-head, standards journaled in the disk-heads, crank-arms on said standards, a common operating-bar for each set of disks, a yoke connected at its ends directly to said bars, and means for shifting said yoke in a

direction transverse to the line of draft, substantially as described.

4. In a cultivator, the combination with two independent disk-heads, of a series of disks carried by each head, standards for said disks journaled in the disk-head, a common operating-bar for each series of crank-arms, a sectional yoke connecting said bars and comprising relatively movable and sliding sections, means for increasing or diminishing the width of said yoke, and means for shifting the yoke laterally, substantially as described.

5. In a cultivator, the combination with two independent disk-heads, and a gang of disks carried by each head and having vertical standards journaled in the disk-heads, common operating-bars for each set of disks, a sectional yoke connecting said bars and having overlapping and relatively-adjustable portions, a lever and segment for adjusting the sections of the yoke relatively to each other, and means for shifting the yoke laterally, substantially as described.

6. In a cultivator, the combination with two independent disk-heads, and a gang of disks journaled on vertical axes in each head, crank-arms on the standards of each set of disks, common operating-bars connecting said crank-arms, a sectional yoke connecting said bars, means for adjusting the sections of the yoke toward and away from each other, a lever for shifting the yoke laterally, and foot-levers connected to the aforesaid lever, all arranged for joint operation substantially as described.

7. In a cultivator, the combination with the machine-frame and carrying-wheels, of a machine-tongue, an auxiliary or draft tongue connected to the main tongue and arranged to swing vertically and laterally, disk-heads and gangs of disks connected to said draft-tongue, and means for raising and lowering the disks, substantially as described.

8. In a cultivator, the combination with the machine-frame, carrying-wheels, and machine-tongue, of an auxiliary or draft tongue connected to the machine-tongue and adapted to swing vertically and laterally, disk-heads connected to the draft-tongue, a seat-frame journaled on the horizontal axis and mounted on the machine-frame, a seat on the swinging end of the seat-frame, and connections between the seat-frame and disk-heads whereby the depression of the seat-frame will effect the raising of the disks, substantially as described.

9. In a cultivator, the combination with the machine-frame, carrying-wheels and tongue, of an auxiliary or draft tongue, disk-heads and disks connected to said auxiliary tongue, a rock-shaft, a lever for operating said shaft, hanger-arms on said rock-shaft, and lifting-chains connecting the disk-heads with said crank-arms, substantially as described.

10. In a cultivator, the combination with the machine-frame, and carrying-wheels, of an auxiliary tongue, disk-heads carrying disks and connected to the auxiliary tongue, a rock-shaft, a pivoted seat-frame, crank-arms on the rock-shaft and interposed connections between the seat-frame and one pair of cranks and between the disk-head and another pair of cranks on the rock-shaft, all arranged for joint operation substantially as described.

11. In a cultivator, the combination with the machine-frame, carrying-wheels and tongue, of an auxiliary tongue movable relatively to the main tongue, disk-heads having disks and connected to the auxiliary tongue, bell-crank levers carrying spindles for the carrying-wheels, and connecting-rods between said levers and the auxiliary tongue, substantially as and for the purpose specified.

12. In a cultivator, the combination with the machine-frame, carrying-wheels and tongue, of an auxiliary or draft tongue connected to the main tongue, an equalizer-bar or evenner on the machine-tongue, pendent clevis-bars connected to said evenner, and draft-rods connecting the pendent ends of said clevis-bars with the auxiliary draft-tongue, substantially as described.

13. In a cultivator, the combination with the draft-tongue, of a disk-head pivotally connected to said tongue, and a longitudinally-extensible stay interposed between the disk-head and tongue, substantially as described.

14. In a cultivator, the combination with the draft-tongue, of a disk-head having a pivotal connection therewith, and a longitudinally-extensible stay interposed between the tongue and disk-head, said stay comprising two sections overlapping and sliding upon each other and each provided with registering openings to receive a connecting-bolt, substantially as described.

15. In a cultivator, the combination with a standard, and a disk having conical recesses in opposite sides, of cones arranged on opposite sides of the disk and fitting said recesses, an annular flange on one cone working in an annular recess in the convex side of the disk, and a bolt or spindle connecting said cones, disk and standard, substantially as described.

16. In a cultivator, the combination with the machine-frame, carrying-wheels and main tongue, of an auxiliary tongue pivotally connected at its forward end to the front end of the machine-tongue, and a gang of disks connected to the draft-tongue and movable independently of the machine-frame, substantially as described.

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