

(No Model.)

2 Sheets—Sheet 1.

L. D. RAILSBACK.
ROTARY DISK PLOW.

No. 510,992.

Patented Dec. 19, 1893.

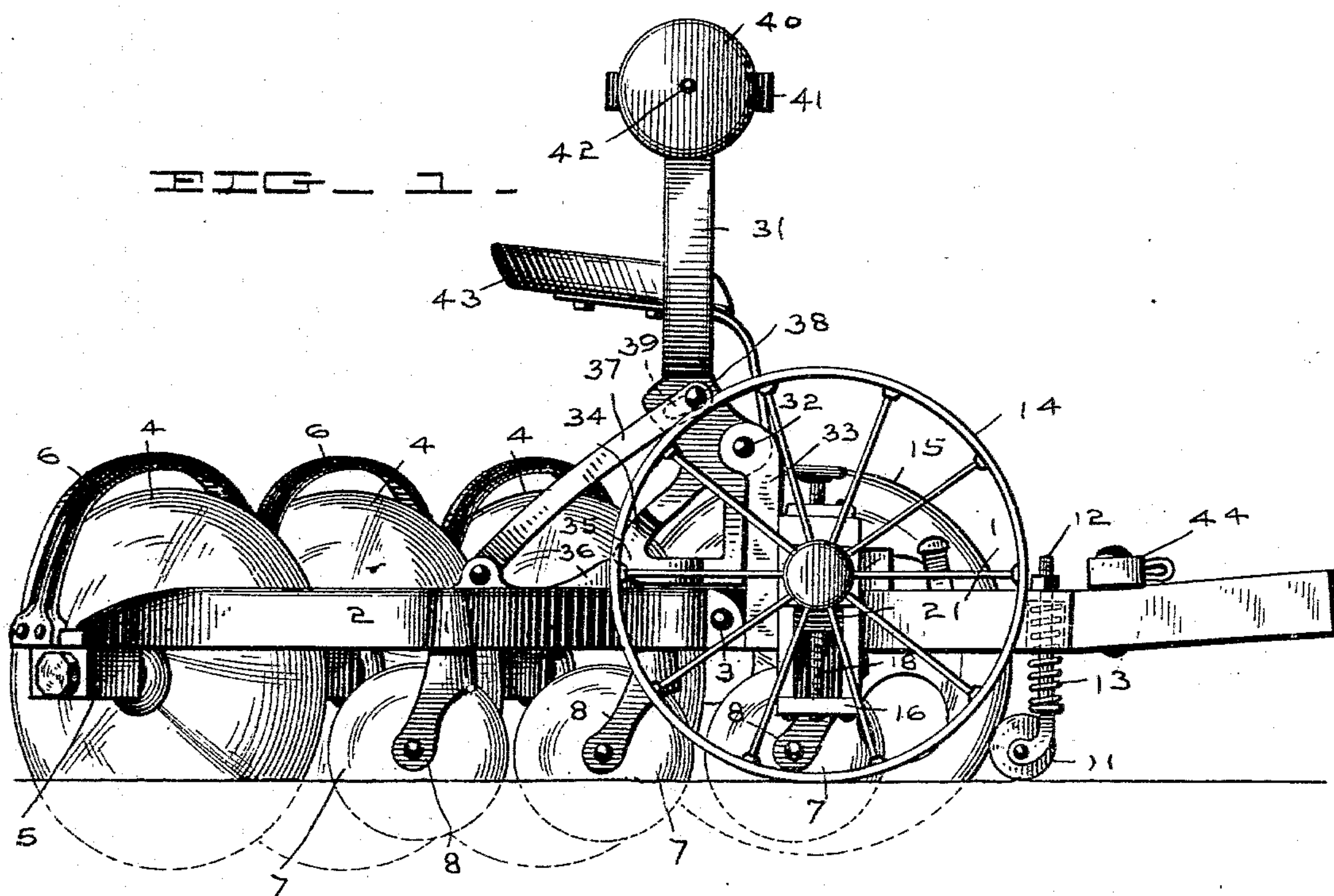
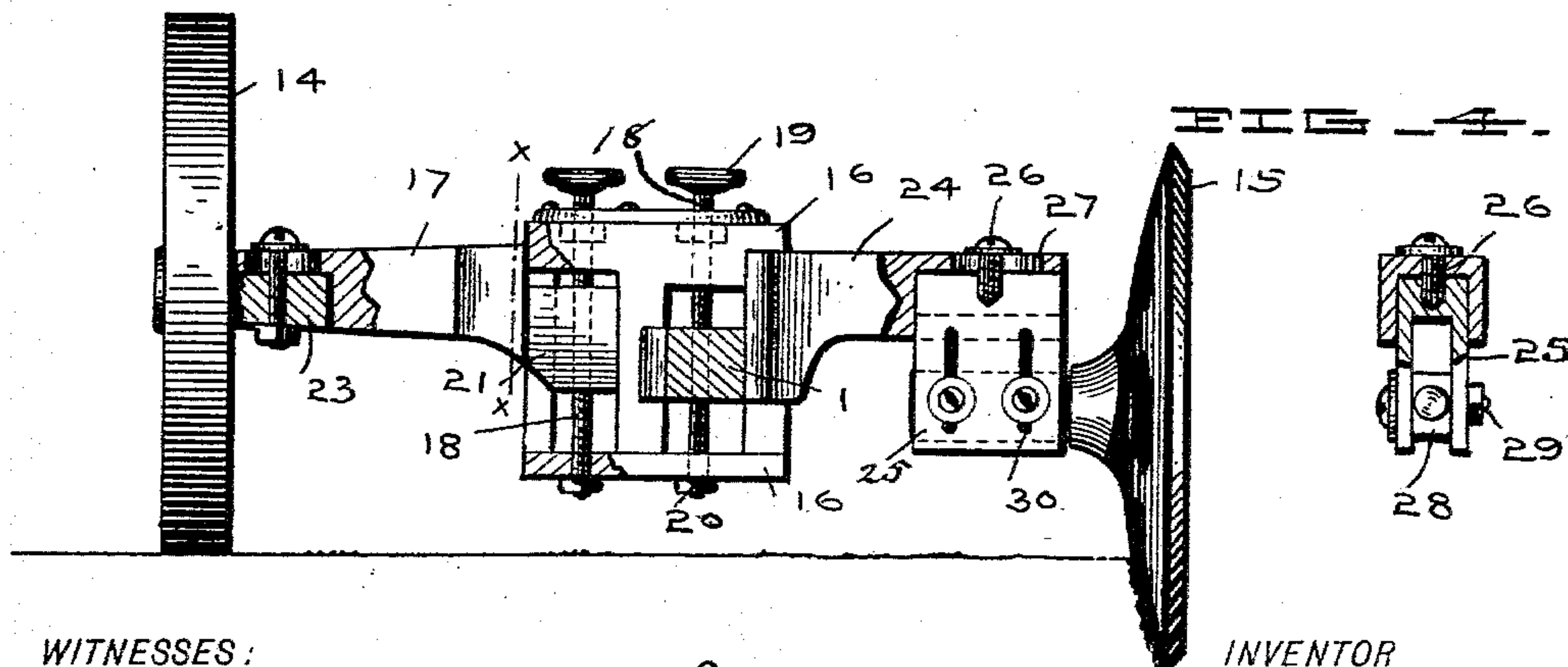


FIG. 3.



WITNESSES:

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O. D. Fildes.

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BY
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His ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

L. D. RAILSBACK.
ROTARY DISK PLOW.

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FIG. 2.

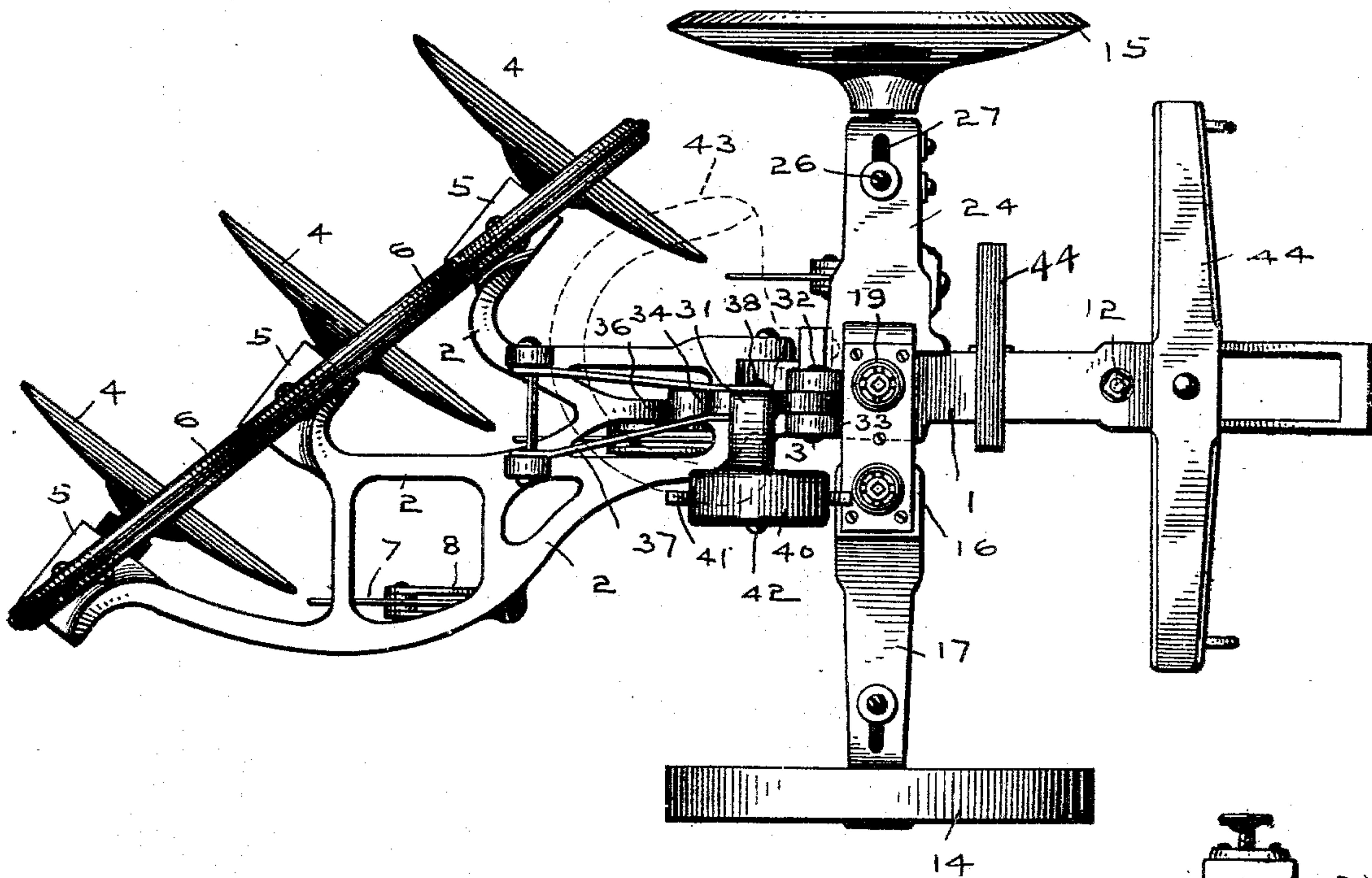


FIG. 5.

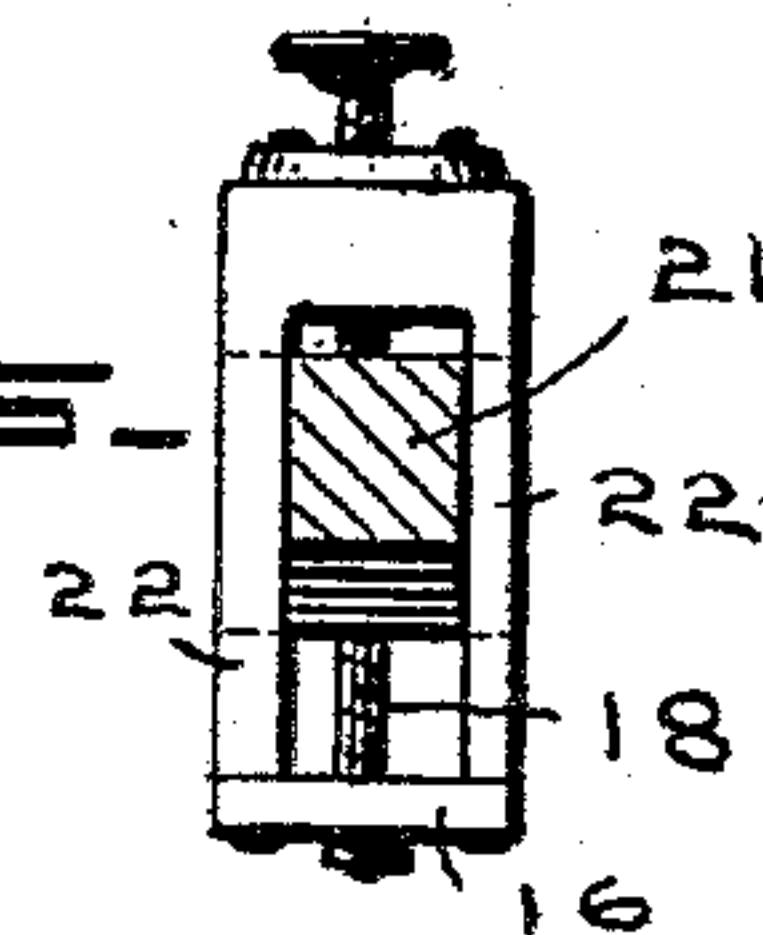


FIG. 6.

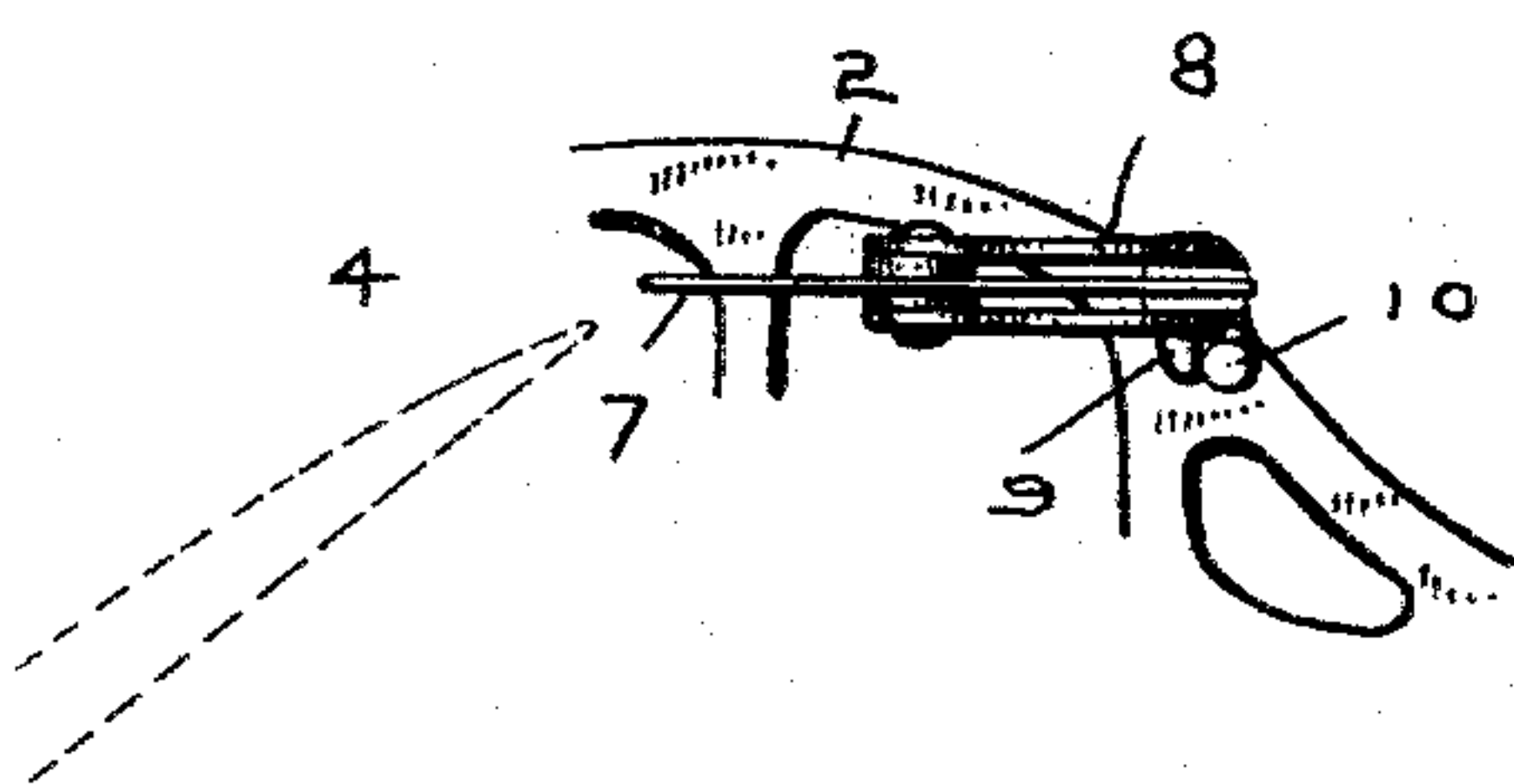
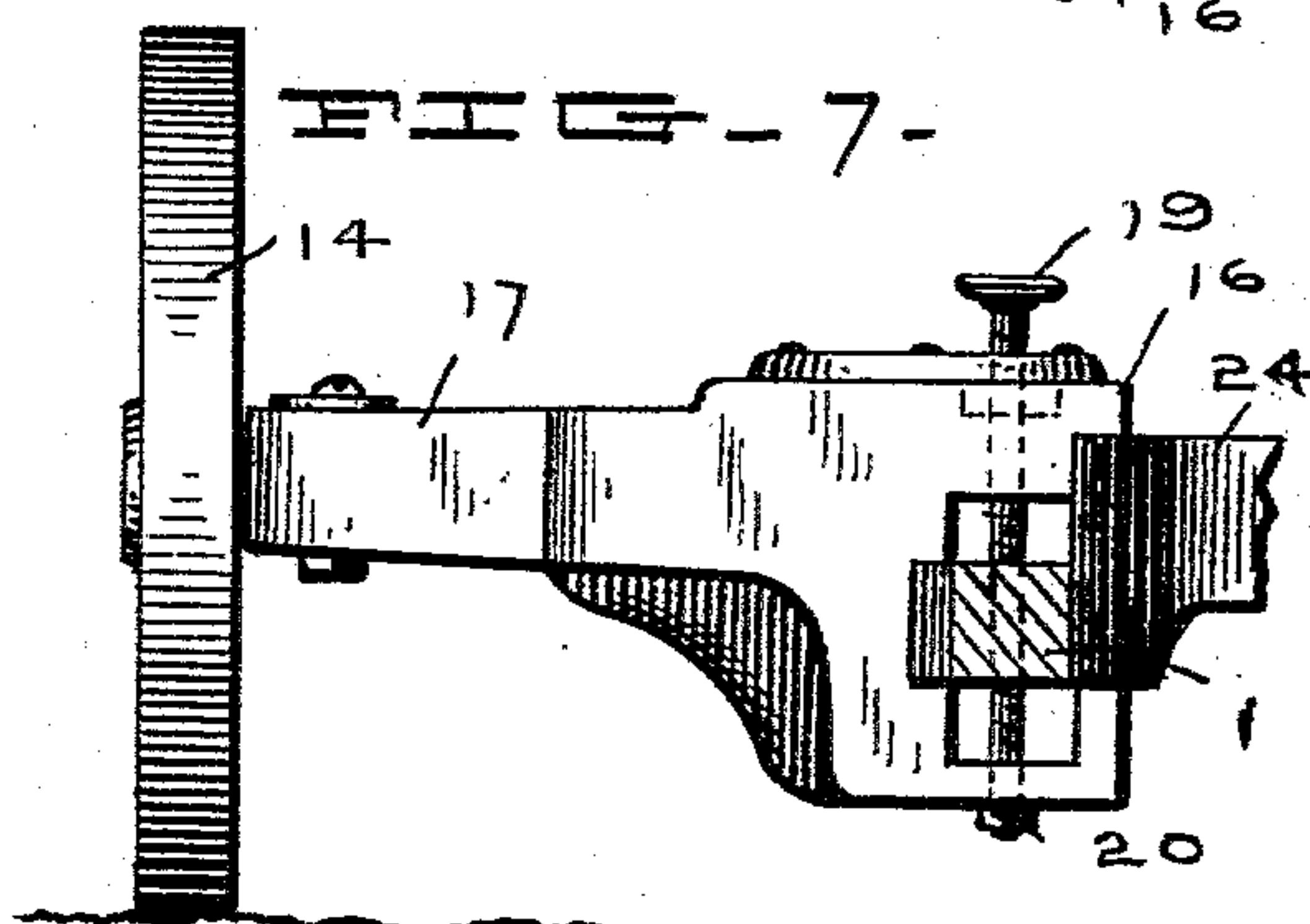


FIG. 7.



WITNESSES:

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INVENTOR
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His ATTORNEY.

UNITED STATES PATENT OFFICE.

LAFAYETTE D. RAILSBACK, OF INDIANAPOLIS, INDIANA.

ROTARY-DISK PLOW.

SPECIFICATION forming part of Letters Patent No. 510,992, dated December 19, 1893.

Application filed October 18, 1893. Serial No. 488,498. (No model.)

To all whom it may concern:

Be it known that I, LAFAYETTE D. RAILSBACK, a citizen of the United States, residing at Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Rotary-Disk Plows; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like figures refer to like parts.

My invention relates to a construction of rotary disk plows that will render them convenient to operate and more serviceable than those heretofore used.

It has for its object the same as that stated in my patent on rotary disk plows, No. 505,777, and dated September 26, 1893; and consists in several improvements on the plow shown and described in that patent.

The chief feature of my invention consists in mounting small rolling cutters immediately in front of the cutting edge of each disk. The object of this arrangement is to prevent the tendency of the plow to run into the land, because of the angle at which the rotary disks must be set in order to turn the soil. The cutters separate the fallow to be turned by each disk from the main land, so that all the disk has to do is to turn that fallow, and therefore it will have no great tendency to run into the land. By this arrangement the draft is also greatly reduced and the furrow wheel need not be staggered as the lateral pull on it is not very great.

Another feature of my invention consists in placing under the tongue, in front of the main frame of the plow, a wheel to support the tongue and take the load off the horses' necks when the rolling disks run over a stone or other impediment. I have placed a spring between the tongue and supporting wheel in order to allow some freedom of movement on the part of the tongue, but not much.

Another feature of my invention consists in making the axle sectional, whereby the furrow wheel can be adjusted laterally and also vertically, independent of the plow disks, in order that they may be set on the same level. Also the plow disks and furrow wheel can be simultaneously adjusted vertically independent of the land wheel, and the land

wheel be vertically adjusted independent of the rest of the plow.

Another feature of my invention consists in placing a shoulder on the plow beam just behind the bracing heel of the hand lever used to elevate and lower the beam. This shoulder combined with the heel of the hand lever holds the disks down to their work positively, and therefore I am enabled to dispense with the stirrup 27, rod 29, small bent lever 30 and spring 31 found in my former patent above mentioned.

Another feature of my invention consists in providing a slot in the hand lever in which one end of the link or brace connecting such hand lever with the plow beam, is mounted, whereby I am enabled to dispense with the arm 23, shown in my former patent, on which the weight is mounted, and can mount the weight directly on the upper end of the hand lever. The plowman when he goes to raise the plow will push the lever forward, and by reason of the slot before mentioned, the lever does not begin to draw up the plow by means of the link until the weight has passed so far to the front of the fulcrum of the hand lever, that it materially assists the plowman in raising his plow.

Figure 1 is a side elevation of my plow while at work. Fig. 2 is a plan view of the same, the seat being shown by dotted lines. Fig. 3 is a view of the axle and wheels, the former being shown partly in section. Fig. 4 is an end view partly in section of the main axle next to the furrow wheel, the furrow wheel being removed. Fig. 5 is a bottom view of a rolling cutter and its attachment to the beam. Fig. 6 is a section of the main axle, on the line $x-x$, Fig. 3. Fig. 7 is a modified form of the portion of the main axle next the land wheel.

In detail 1 is a tongue, and 2 the plow beam pivoted to the rear end of the tongue by the bolt 3. The beam is divided into three arms on which three rotary plow disks 4 are mounted. These plow disks are mounted in the boxing 5 in the same manner as described in my former patent. It will be observed that the axle of the plow disks extends from the convex and not the concave side of the disk, for if it extended from the concave side it

would be liable to choke the plow by catching weeds. The boxings 5, or the arms of the beam in which the disks are mounted, are held exactly in place by the guard 6, which is attached to each boxing and curves over each disk as shown. This guard is preferably made of metal in order to strengthen the beam, weight down the plow disks and protect the driver in case he should accidentally fall back onto the disks.

I provide rolling fallow cutters 7 secured to the under side of the beam or axle, as the case may be, by an ordinary swivel 8. This rolling fallow cutter should be so located that it will run just in front of the forward edge of the rotary plow disk, and made of such size and secured in a swivel of such size, that the rolling cutter will cut the fallow as deep as the lower edges of the disks will run. The purpose of the rolling cutter is to separate the fallow from the land, and to relieve the plow disks of that work, in order that the plow disks may not cause the plow to run into the land or to have such a tendency to run into the land, as to materially increase the draft. These rolling cutters reduce the draft and enable the furrow wheel to be mounted straight instead of staggered. In order to prevent the rolling cutter 7 from running inland when a left handed plow is turning to the right, or vice versa, I provide on the swivel attachment a lug 9 adapted to engage a pin 10 secured to the under side of the beam, as seen in Fig. 5, the two being so arranged relatively to each other that they will stop the rolling cutter and prevent it from swinging landward, under the circumstances just mentioned.

When the beam 2 is locked down to its work, being connected to the butt end of the tongue, if the plow disks run over a stone or other impediment, they will cause the front end of the tongue to pull down with great force on the horses' necks. In order to remedy this difficulty I place a caster wheel 11, with a tire about six inches wide, under the tongue in front of the main axle. I pass the bolt 12, on which the caster wheel is mounted, through the tongue, as shown in Fig. 1, and place between the caster wheel and the tongue a spring 13 which coils spirally around the bolt 12 and gives the tongue some freedom of movement vertically. In order to have sufficient play for the tongue, I bore out a hole in the under part of the tongue part of the way, and extend the spring 13 up into the hole, as seen in dotted lines in Fig. 1.

I use a land wheel 14 and a furrow wheel 15, as shown in Fig. 1. The latter I do not mount in a staggered position because the sidewise pull of the plow, when provided with rolling fallow cutters, is not sufficient to render it necessary to make the furrow wheel staggered, as in my former patent. There is, however, a little lateral pull and for that reason I make the edge of the wheel somewhat angular, so that it will not readily slip later-

ally in the furrow. I make my axle sectional in order that I may more conveniently adjust the various parts of my plow. Its central part consists of a frame 16 so constructed as to have two vertical slots or openings, as seen in Fig. 3, through one of which the tongue 1 extends, and in the other the inner end of the section 17 of the axle is secured. In these openings in the frame, the tongue as well as the section 17 of the axle are vertically adjusted by means of the screw bolts 18. These screw bolts extend entirely through the frame 16 vertically, and have on the upper end a hand wheel 19 or other means of operating them, and on the lower end caps 20 or other means of preventing their upward movement. Hence these bolts 18 are always vertically stationary, and their passage through the lower part of the frame 16 renders them strong and stable. The middle portion of these bolts 18 is threaded and the holes in the tongue and the section 17 of the axle through which the bolts extend are likewise threaded, so that when the bolts are turned the tongue or section 17, as the case may be, is lowered, or the frame 16 elevated. The section 17 of the axle on which the land wheel is mounted, is secured to the frame 16 by having a head 21 on the inner end fitting in the vertical slot in the frame 16. This head is connected with the main part of the section 17 by a neck that extends through the vertical slot or opening in the end of the frame 16, as shown in Fig. 6. Since the function of the two bolts 18 is evidently the same, viz., to adjust the plow disks and the furrow wheel on the one hand, in relation to the land wheel on the other, and since the construction just described and shown in Figs. 1 and 3 is adopted solely for the purpose of making this vertical adjustment twice as great by using two bolts instead of one, it is clear that by lengthening the frame 16 vertically and thus lengthening the slot, through which the tongue extends, and the bolt 18, the desired vertical adjustment could be procured by one bolt instead of two, and in such case the frame 16 and the section 17 of the axle would be integral and formed in one piece, thus avoiding the use of a screw bolt and the construction of the frame 16 that is next to the land wheel, rendering the axle somewhat stronger and simpler than in the form shown in Fig. 3, but probably would not be as desirable as that form where the plow is to be used for deep plowing. This modification, which is found in Fig. 7, therefore does not alter the method of adjustment, but merely the limit of adjustment, as in the form shown in Fig. 3 the operation of either screw bolt will produce the same result. The stub axle 23 is adjustably mounted in a slot at the outer end of the section 17 of the main axle in the same manner as shown in my former patent.

24 is another section of the main axle and is rigidly secured to one side of the tongue, as shown in Fig. 3. In its outer end is carried the box 25, as shown in Fig. 4, and the

two are held together by the screw or bolt 26, which is laterally movable in the slot at 27 in the top of the outer end of the section 24 of the axle. In the box 25 the stub axle 28, on which the furrow wheel is mounted, is secured and held in place by bolts 29, that are vertically movable in slots at 30 in the sides of the box 25. By the construction just described it will be observed that the furrow wheel will always be vertically adjusted simultaneously with the plow disks, which is desirable, as it should run as low as they do after the proper depth of furrow has been reached for the furrow wheel to run in. Previous to that, if desired, the furrow wheel can be vertically adjusted independent of the plow disks. In this respect the device herein shown is a material improvement over the form shown in my prior patent, where the adjustment of the plow disks is independent of the furrow wheel in all cases.

I hold down my plow beam to its work by the hand lever 31, as in my former patent. This hand lever is pivoted at 32 to the vertical arms 33 which are rigidly secured to the butt end of the tongue. The lower end of this hand lever is provided with a heel 34, substantially like that shown in my former patent, excepting that its rear lower corner 35 is rounded and adapted to snugly engage a lug 36 rigidly secured on top of the beam 2, as seen in Fig. 1. The faces of the lug 36 and the corner 35 of the hand lever should snugly engage each other, in such manner that any upward movement of the plow beam would cause the lug 36 to push toward a point below the pivot 32, so that no matter what degree of pressure might be brought against the corner 35 of the heel of the lever, the beam could not be lifted. By using this construction I am enabled to dispense with the stirrup, spring and connecting rod shown in my former patent, on the hand lever.

37 are links or braces, preferably two in a machine like the one herein shown, pivoted at their lower ends to the beam and at their upper ends to a bolt 38, that works in a slot 39, in the hand lever 31.

40 is a weight adjustably mounted on the cross bar 41, at the top of the hand lever 31.

The purpose of the weight 40 while in the position shown in Fig. 1, is to assist in holding the hand lever 31 in a vertical position, but its main function is to assist the plowman in elevating the plow disks, which he does by pushing the hand lever 31 forward. As he does this the corner 35 of the heel of the hand lever will disengage the lug 36 on the beam and the weight 40 will be carried to the front of the pivotal point 32 sufficiently far before the bolt 38 will reach the rear end of the slot 39 and thus begin to pull and lift up the beam 2, so that the weight will be a great assistance to the plowman in elevating the disks, and when the disks are elevated will hold them in an elevated position by its own weight. The weight 40 is constructed with a

slot which renders it laterally movable on the cross bar 41 and is held in place by the set screw 42. By using a hand lever provided with a slot 39 as described above, I am enabled to dispense with the arm on which the weight is hung in my former patent. Of course the slot in the hand lever must be of such length as to enable the heel to escape from the lug on the beam before the link begins to elevate the beam.

43 is a seat.

44 is a double tree, and 45 is a foot rest.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a rotary disk plow wherein the plow beam is connected to the tongue, an axle consisting of a section on which the furrow wheel is mounted rigidly secured to the tongue, and a section on which the land wheel is mounted so combined with the tongue that such section of the axle and the tongue will be vertically movable independent of each other.

2. In a rotary disk plow wherein the plow beam is connected to the tongue, an axle consisting of one section on which the furrow wheel is mounted rigidly secured to the tongue, and another section on which the land wheel is mounted provided with a central vertical opening through which the tongue may extend, and a bolt so mounted in the axle as to be vertically immovable and extending through the tongue, the central part of such bolt and the hole in the tongue through which the bolt passes being threaded.

3. In a rotary disk plow wherein the plow beam is secured to the tongue, an axle consisting of one section on which the furrow wheel is mounted rigidly secured to the tongue, a central section provided with a central vertical slot through which the tongue extends, a section on which the land wheel is mounted secured to and vertically movable in such central section of the axle, and bolts so mounted in such central section as to be vertically immovable, one bolt extending through the tongue and the other through the inner end of the section of the axle on which the land wheel is mounted, the middle part of each bolt and the hole through which it passes being threaded.

4. In a rotary disk plow wherein the tongue and beam are connected, an axle consisting of one part on which the land wheel is mounted so combined with the tongue as to be vertically adjustable, and another part of such axle rigidly secured to the tongue and provided with an opening in its end, and a slot in its top, a box fitting in such end opening and secured to such axle by a set screw operating in such slot and provided with vertical slots in its sides, and a stub axle on which the furrow wheel is mounted fitting in such boxing and secured thereto by clamping bolts extending through the slots in the sides of such box.

5. In a rotary disk plow, a beam provided with a plurality of arms on which are mounted plow disks, and a guard formed solidly of a

plurality of curves extending over the disks, the depending portion of such guard between the disks rigidly secured to the arms of the beam on which the disks are mounted, substantially as shown and described.

6. In a rotary disk plow, a beam carrying the disks pivoted to the frame, a hand lever mounted on the frame, provided with a heel at its lower end, and a lug on the beam adapted to engage the heel of the hand lever and lock down the beam, substantially as shown and described.

7. In a rotary disk plow, a beam carrying the disks pivoted to the frame of the plow, a hand lever mounted on the framework and provided with a heel at its lower end and a slot above its pivotal point, a lug on the beam adapted to engage the heel and lock down the plow beam, and a link pivoted to the beam and engaging the slot in the hand lever, substantially as shown and described.

8. In a rotary disk plow, a beam carrying the disks pivoted to the frame of the plow, a

hand lever mounted on the framework and provided with a heel at its lower end, a lug on the beam adapted to engage the heel of the hand lever and lock down the beam, and a weight mounted on the upper end of such hand lever.

9. In a rotary disk plow, a beam carrying the disks pivoted to the framework, a hand lever mounted on the framework and provided with a heel at its lower end and a slot above its pivotal point, a lug on the beam adapted to engage the heel of the hand lever and lock down the beam, a link pivoted to the beam and engaging the slot in the hand lever, and a weight adjustably mounted on the upper end of the hand lever.

In witness whereof I have hereunto set my hand this 11th day of October, 1893.

LAFAYETTE D. RAILSBACK.

Witnesses:

V. H. LOCKWOOD,
N. D. TILFORD.