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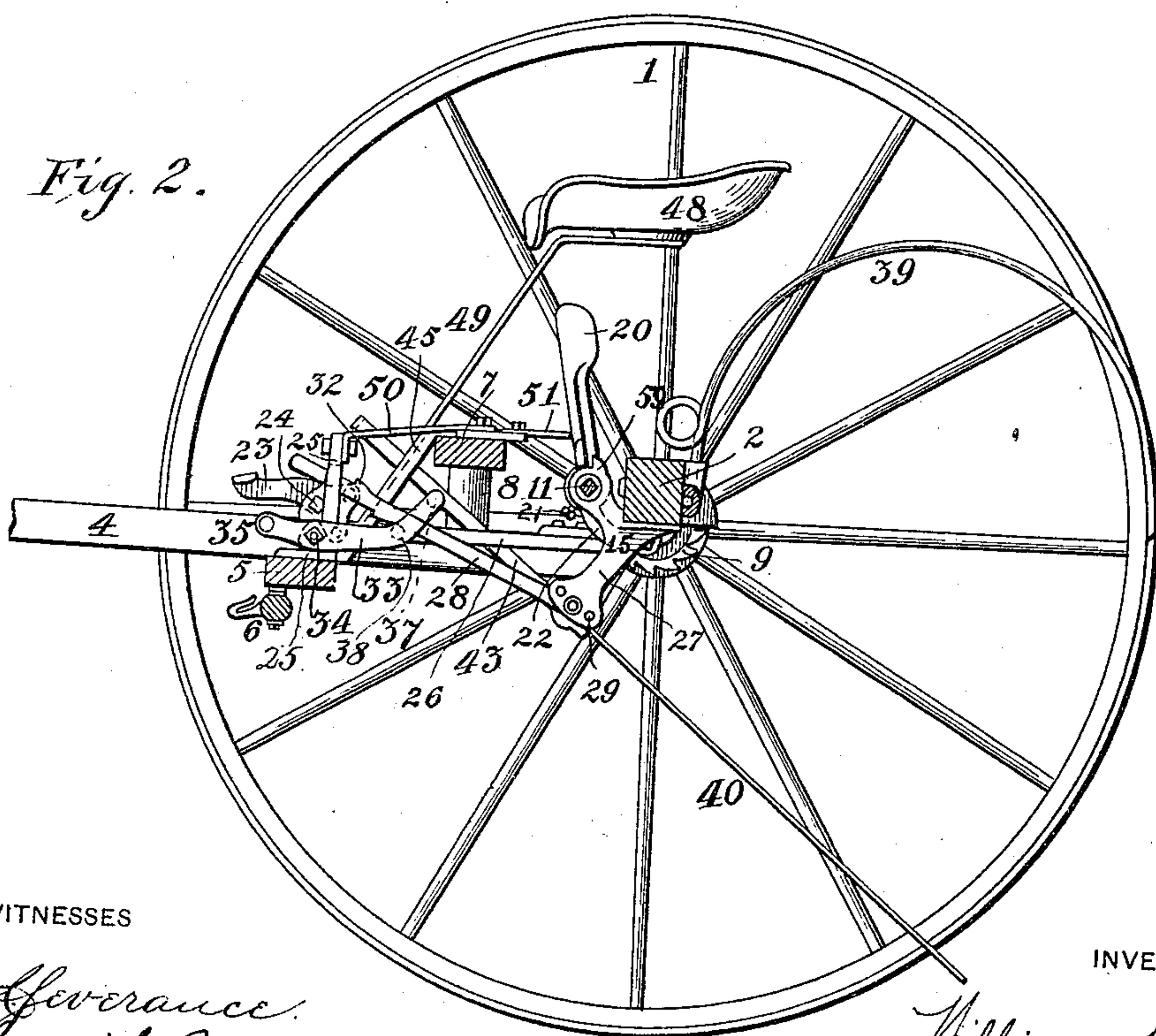
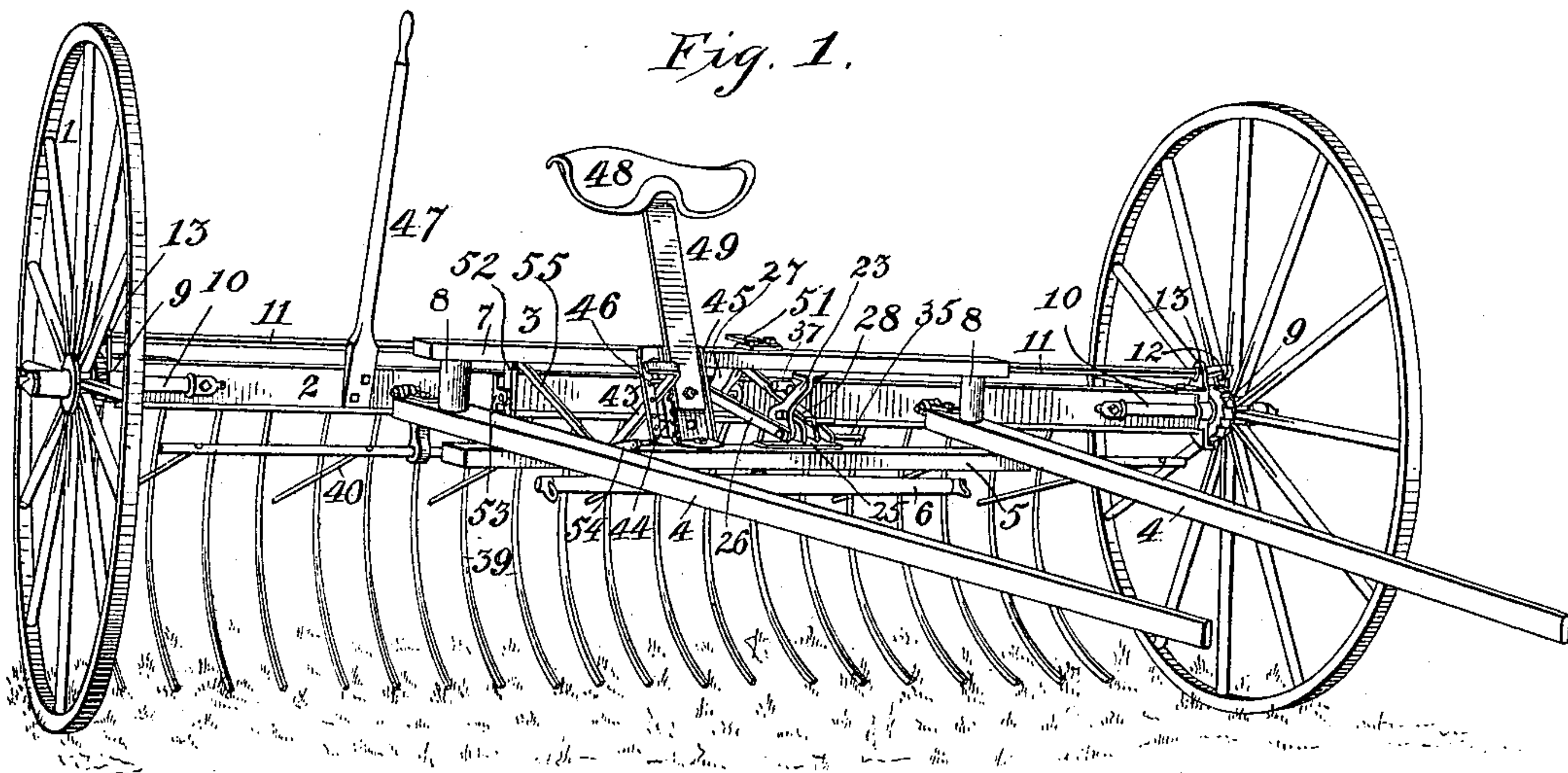
Patented Dec. 20, 1898.

W. STRAIT.
HORSE HAY RAKE.

(No Model.)

(Application filed Mar. 25, 1891.)

4 Sheets—Sheet 1.



WITNESSES

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Fig. 3.

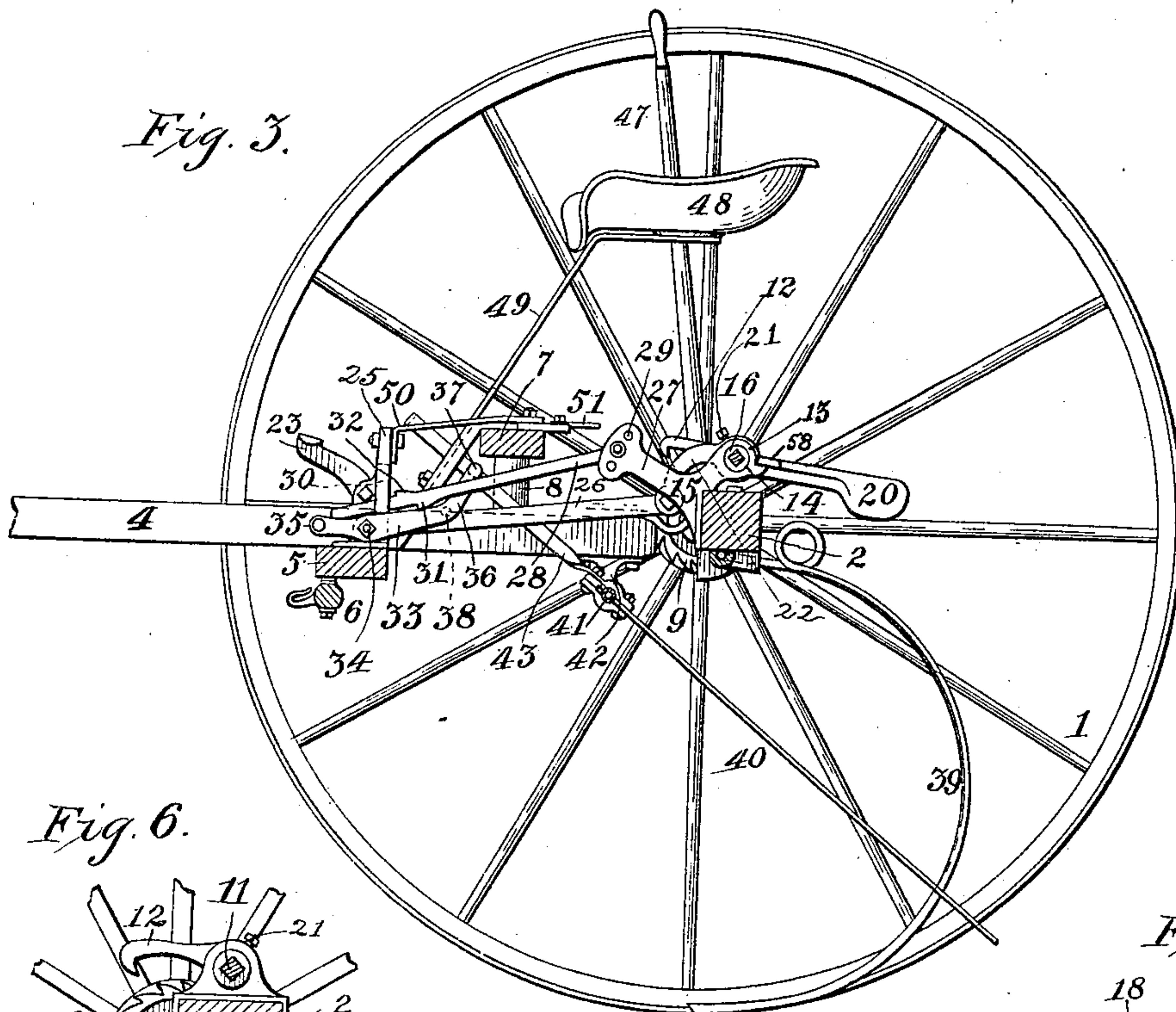


Fig. 6.

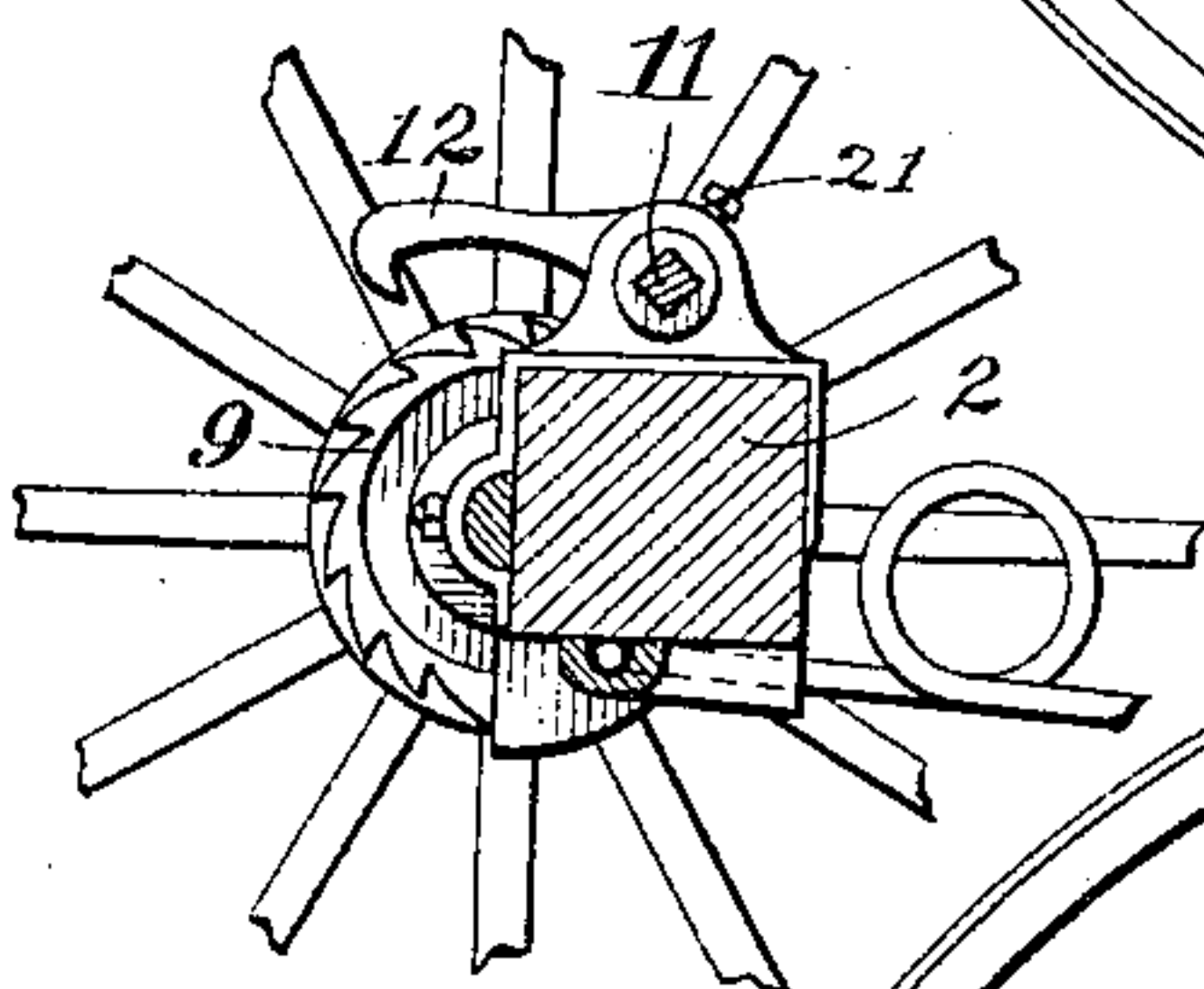


Fig. 7.

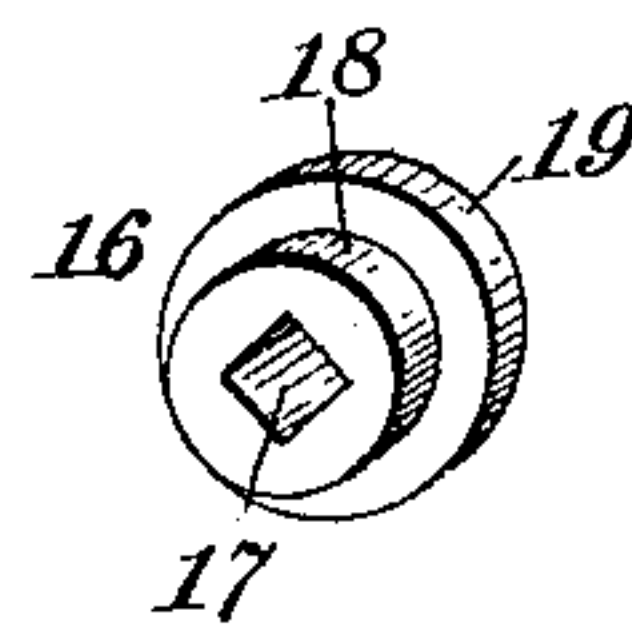
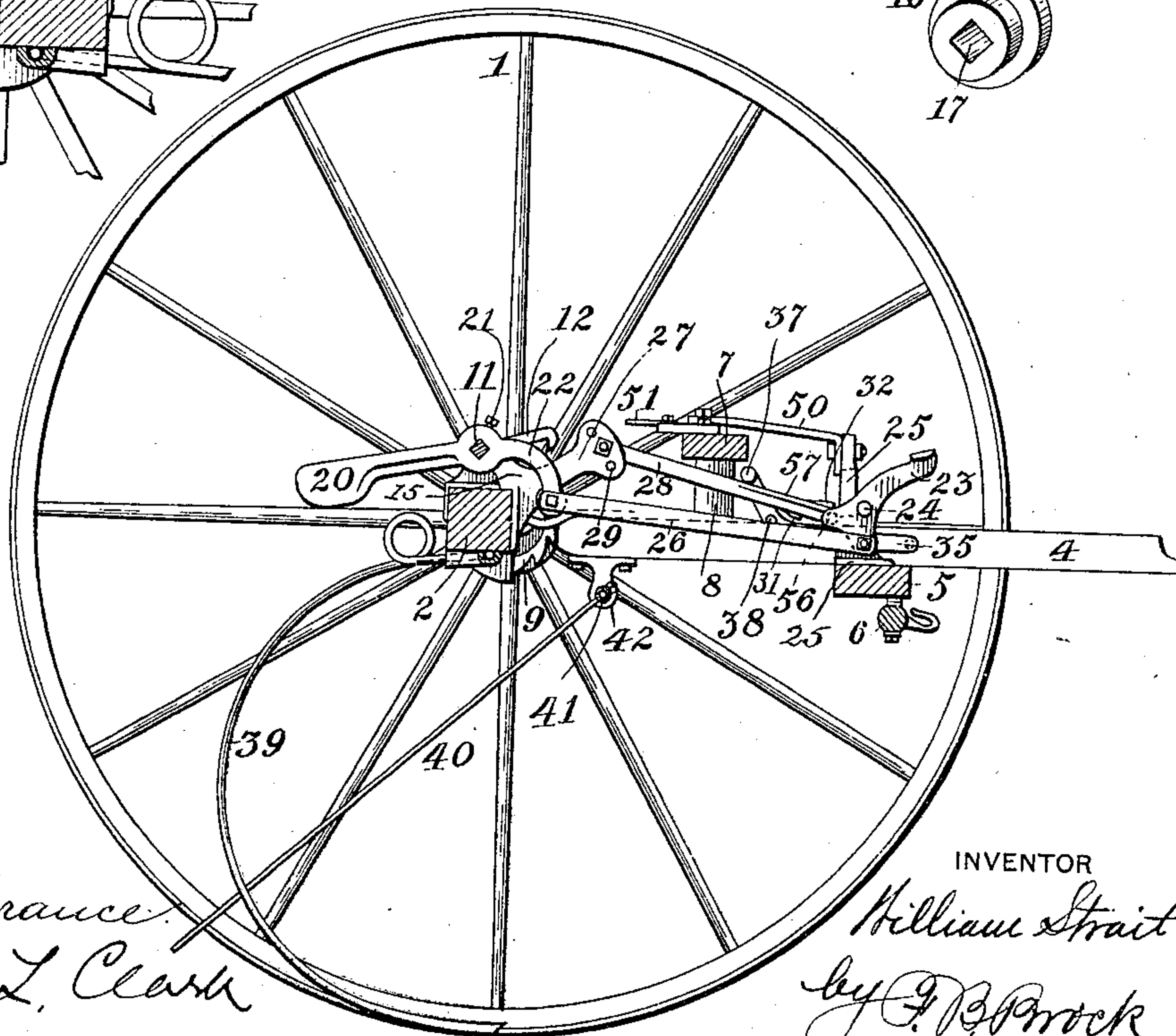


Fig. 4.



WITNESSES

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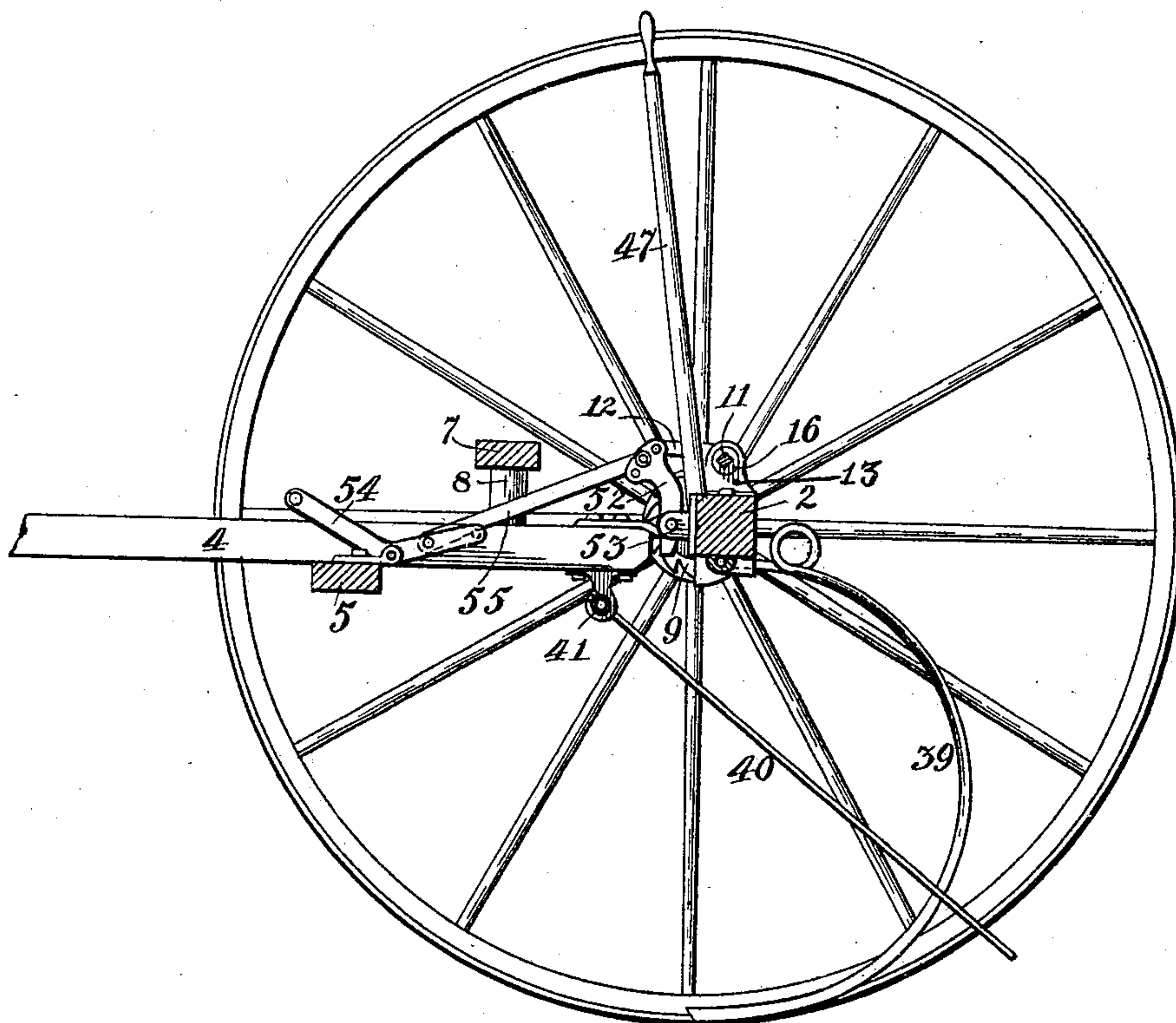
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Fig. 5.



WITNESSES

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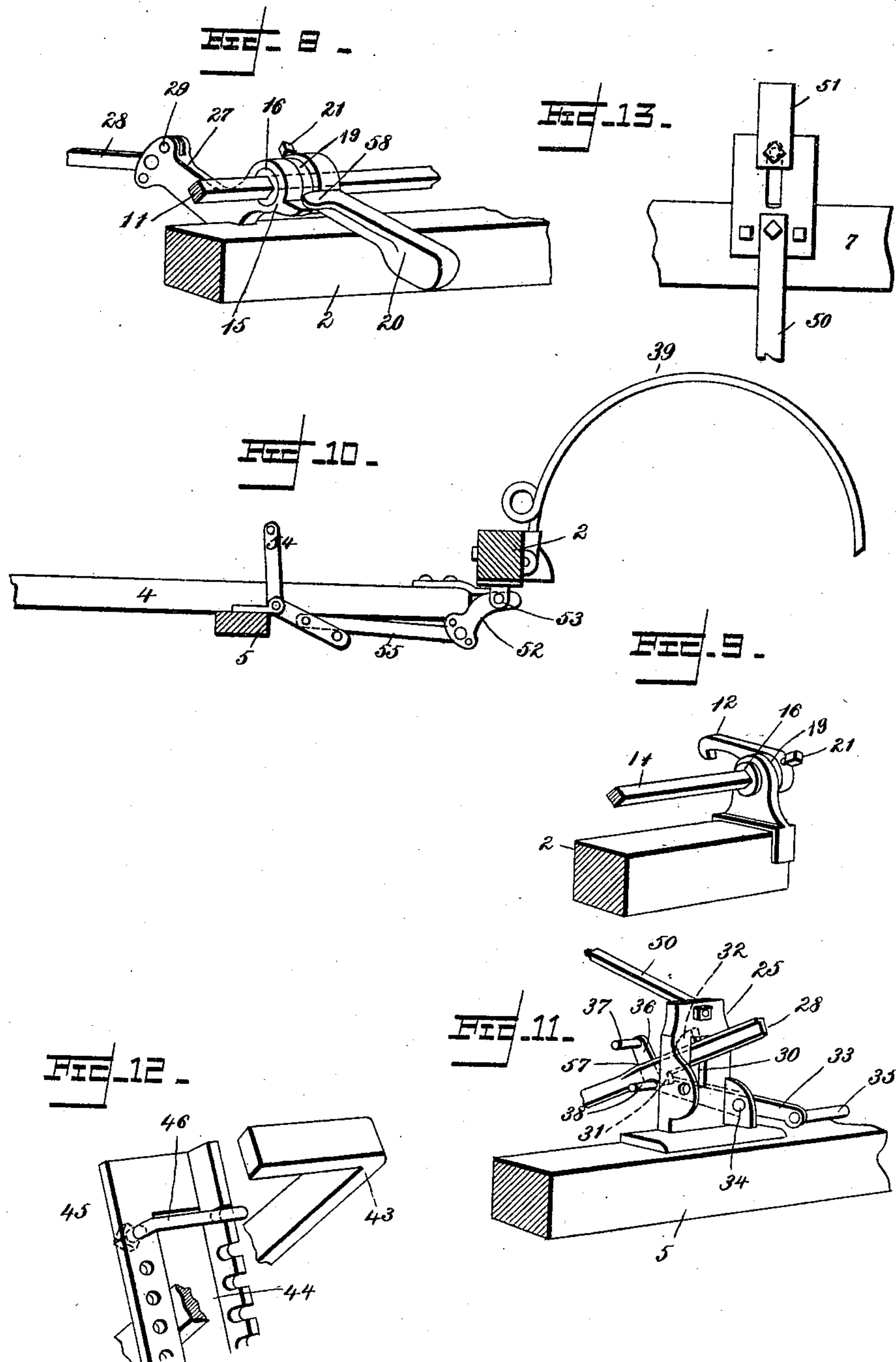
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(No Model.)

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UNITED STATES PATENT OFFICE.

WILLIAM STRAIT, OF ELMIRA, NEW YORK.

HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 616,159, dated December 20, 1898.

Application filed March 25, 1891. Serial No. 386,362. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM STRAIT, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Horse Hay-Rakes; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of a rake to which I have applied my improvements. Fig. 2 is a vertical sectional elevation of the rake when the teeth are up. Fig. 3 is a vertical sectional elevation of the rake when the teeth are down. Fig. 4 is a similar view to Fig. 3, looking in an opposite direction. Fig. 5 is a similar view to Fig. 3, the section being taken through another line of the rake. Fig. 6 is a detail sectional view. Fig. 7 is a perspective view of one of the thimbles. Figs. 8 and 9 are detail perspectives showing the method of inserting the thimbles 16 within the bearings at the center and ends of the rake-head, respectively. Fig. 10 is a detail section and elevation, corresponding to Fig. 5, showing the rake-teeth held up. Fig. 11 is a detail perspective showing the piece 25 and relative parts. Fig. 12 is a detail perspective in further exemplification of the adjustable stop 46. Fig. 13 is a detail plan of the adjustable stop 51.

In the drawings, 1 are the wheels.

2 is the rake-head.

The frame consists of the thills 4, cross-bar 5, to which the whiffletree 6 is attached, and cross-bar 7, supported upon the short spuds 8.

9 are the ratchets upon the wheels.

10 are the short wheel-axles, secured to the front side of the rake-head.

11 is the angular dog-carrying rod, extending across the rake above the rake-head, preferably square.

12 are the dogs, secured upon rod 11 at each end above the ratchets 9.

13 are the opposite end journal-boxes for the torsional rod 11.

14 is the central rod-box, forming, preferably, one of the arms of the arm 15, which is rigidly secured to the rake-head.

16 are thimbles having a central angular aperture 17, corresponding to the rod 11, upon which they are slipped.

18 is the outer circular bearing of the thimbles 16, which fits into the journal-boxes 13 in the center and ends of the rake-head.

19 is a boss formed on one side of the thimbles 16.

The thimbles 16 are held in place in their respective boxes by bringing the bosses 19 to bear snugly against the boxes, and then, in the center box, bringing the weighted lever-arm 20 closely against the bosses, and fastening said lever-arm with a set-screw 21, and, in the outer or end boxes, bringing the dogs 12 to bear against the bosses in the same manner, and fastening the dogs by the set-screws 21. The dogs 12 and lever 20, having angular apertures to fit the rods 11, can be locked by set-screws and permit such connections to be made.

As the efficient operation of the rake depends upon the accurate and careful adjustment of the dogs to the lever connecting the rod 11 with the dumping mechanism, it will be seen that in case of repairs or renewal of the parts the dogs and weighted lever cannot be put on in an inoperative position without it being at once apparent. This is due to the fact that the rod is square, and the openings in the dogs and weighted arm are square, admitting of only four wide-spaced radial adjustments, which are so far apart that a wrong adjustment will be readily detected, even by an unskilled mechanic.

22 is the forwardly-projecting arm of the weighted lever on rod 11, which normally throws the dogs out of engagement.

23 is a foot-lever pivoted at 24 upon the piece 25, bolted to the cross-bar 5 of the frame 3.

26 is the connecting-link between the arm 22 and the foot-lever 23.

27 is the locking-bolt arm of the arm 15, projecting forwardly of and above the rake-head.

28 is the holding and locking bolt for locking the rake up or down.

29 are holes in arm 27 to secure the adjustment of the locking-bolt.

30 is a slot formed in the piece 25, through which the bolt 28 passes.

31 is a stop formed on the locking-bolt 28,

adapted to strike the bottom of the slot or stop 30, and thereby lock the rake down, the said stop 31 being placed a sufficient distance from the stop 30 when the rake is down to afford a limited play or movement to the rake to enable it to pass over obstructions in the field.

32 is a stop also formed on the locking-bolt 28, which is arranged to strike the upper part of the slot or stop 30 when the rake is up, and thereby lock the rake in that position.

It will be noticed that the rake is locked both up and down by a forward thrust of the locking-bolt against the frame-stop in the same direction.

33 is a lever pivoted to the piece 25 upon the frame at 34.

35 is a foot-treadle extension of the lever in front.

36 is a rear extension of the lever 33.

37 is an arm or piece on the end of the arm 36, which projects over and normally rests upon the locking-bolt 28, serving to hold said bolt down. 38 is another arm or piece projecting below and across the path of the locking-bolt and which supports said bolt when the rake is up.

39 are the rake-teeth, which are secured to the under side of the rake-head 2 and oscillate therewith.

40 are the clearer-bars, rigidly attached to a clearer-rod 41, preferably made of tubing.

42 are boxes secured to the under side of the thills, within which the clearers and clearer-rod vibrate.

43 is a foot-lever attached directly to the clearer device and projecting forwardly and upwardly, so as to be within easy reach of the operator for actuating the same.

44 is a vertically or obliquely arranged slot formed on or with the seat-bar-supporting casting 45, through which the foot-lever 43 projects.

46 is an adjustable stop adapted to be set in a series of notches on the side of the slot 44 for the purpose of varying the throw and inclination of the clearer-bars 40.

47 is the hand-lever on the rake-head for dumping the rake by hand.

48 is the seat, and 49 the seat-supporting bar, adjustably bolted to the casting 45.

50 is a rigid brace connecting the cross-bar 7 with the slotted stop or piece 25.

51 is an adjustable trip bolted to the bar 7 for the purpose of striking the weighted lever 20 and throwing the dogs 12 out of engagement, so that the rake may drop back after being dumped. The adjustment of the trip permits the rake to be dumped at different heights in its upward movement.

52 is a lever pivoted in a bracket 53 on the rake-head 2, having a series of holes similar to lever 27 and having a limited vibratory play.

54 is a foot-lever pivoted upon the frame, and 55 a connecting-link to bring the lever 52 and the foot-lever 54 substantially in line,

whereby the rake may be held by the foot when up and also by the foot when down.

The slight freedom of vibratory movement between the rake-head and lever 52 permits of a slight movement of the rake—as, for instance, in opposing very slight obstructions—without jarring the foot of the operator resting upon the foot-lever 54. It will be apparent, however, that any tendency of the rake to jump the row will cause the rake-head to impinge against the tail of the lever 52, and farther upward movement of the rake will then be resisted by the foot of the operator.

In operation the rake is normally locked down when the teeth are raking by the locking-bolt 28, which allows at the same time a limited movement to the rake-teeth and rake-head in passing over obstructions. Should it be desired to unlock the rake when raking, the foot is placed upon the foot-lever 35, causing the stop 38 to strike and raise the bolt 28, so that the stop 31 on the bolt will pass freely through the slotted stop 30. When desired to lock the rake down by foot-power alone, the foot is still kept on the lever 35 and the other foot placed on the lever 54, which, acting through the link 55 and lever 52, holds the rake down to its work.

It should be understood that in dumping the rake the levers 27 and 52 on the rake-head pass below the axial line thereof and project below at about the same angle or position as they occupy when the rake is down.

When the rake is up and it is desired to hold it up by the foot, the operator places his foot upon the lever 54 in the same manner as if the rake were down.

Should it be desired to lock the rake up positively, the foot is placed upon the lever 35, which causes the arm 38 to throw the stop 32 of the bolt 28 into the upper end of the slotted stop 30, when the weight of the rake locks the bolt in that position.

When it is desired to dump the rake at a windrow or any other point, the operator places his foot upon the treadle 23, which causes the link 26 to be thrust rearwardly, the weighted lever 20 lifted, and the dogs 12 thrown into the ratchets 9 on the wheels. The forward motion of the rake or, in other words, the rotation of the wheels causes the rake-head 2 to revolve forwardly upon the wheel-axes until the lever 20 strikes the adjustable stop 51, which throws the dogs out of the ratchets and allows the rake to drop back again. At the same time the lever 23 is operated a pin 56 thereon is brought to bear on the under side of a ledge 57, formed on the locking-bolt 28, raising said bolt and its stop 31 from its locking position, so as to pass freely through the slotted stop 30.

The oscillation of the arm 52 permits the rake-teeth to roll under the rake sufficiently to raise the rake-teeth from the ground—for instance, to allow the backing of the rake over a windrow or pile of hay. The foot is

also at the same time placed upon the lever 43, which raises the clearer-bars 40 sufficiently to pass over the hay in backing.

The clearer-bars exert a constant weight upon the hay while it is being raked and facilitate the dumping at the windrows.

58 is a stop upon the weighted lever 20, and 59 a stop upon the arm 15 for limiting the movement of the dogs 12, so as to normally throw them out of engagement by the weight of said lever.

I claim—

1. In a horse-rake, the combination with the frame and dumping mechanism, of an angular dog-carrying torsion-rod, thimbles having corresponding angular apertures adapted to slip upon said rod and provided with an exterior circular bearing and an adjacent collar, housings at the center and ends upon the rake-frame for receiving the circular bearings of said thimbles, an arm upon said torsion-rod having an angular aperture adapted to be disposed against the collar of the central thimble and rigidly secured to said rod for the purpose of holding the thimble in place, dumping mechanism pivotally connected to said arm for throwing the dogs into engagement, and dogs having angular apertures rigidly secured to each end of said rod and disposed against the collars of the thimbles in the housings at each end of the rake-head to secure the same thereto.

2. In a horse-rake the combination of the frame, a rake-head, a projecting arm secured thereto, a locking-bolt pivoted to said arm, a stop upon said frame, a stop upon said bolt for normally locking the rake down by contact with the frame-stop, another stop upon the bolt adapted to lock the rake up, by engaging the frame.

3. In a horse-rake the combination of the frame, a rake-head, a projecting arm secured thereto, a locking-bolt pivoted to said arm and adapted to engage a stop upon the frame,

and a lever pivoted to the frame, having a piece which rests normally upon the upper side of the locking-bolt when the rake-teeth are down, and another piece upon which said bolt rests when the rake-teeth are up.

4. In a horse-rake the combination of the frame, a rake-head, a projecting arm secured thereto, a locking-bolt pivoted to said arm, a stop upon said bolt adapted to engage the frame-stop for normally locking the rake down, another stop upon the bolt also adapted to engage the frame-stop for locking the rake up, a stop upon the frame in operative relation to the bolt, and a pivoted lever upon the frame adapted to engage and unlock the lever-bolt.

5. In a horse-rake, the combination of the frame, a rake-head, an arm upon the rake-head, a locking-bolt pivoted to said arm, a stop upon the frame and a stop upon the locking-bolt for normally locking the rake down, a pivoted lever upon the frame for unlocking the locking-bolt, mechanism for dumping the rake, another lever for operating the dumping mechanism and having also a piece adapted to engage and release the locking-bolt.

6. In a horse-rake the combination of a frame, a rake-head rotatably mounted thereon, an arm secured to the rake-head so as to lie above the axial line of the rake-head when the rake is down, and below the axial line when the rake is up, a pivoted locking-bolt attached to said arm, a lock-stop upon the frame and lock-stops upon the bolt, whereby the rake is both locked up and locked down by a thrust motion of the locking-bolt in the same direction.

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

WILLIAM STRAIT.

Witnesses:

THOS. S. HOPKINS,
F. B. BROCK.