

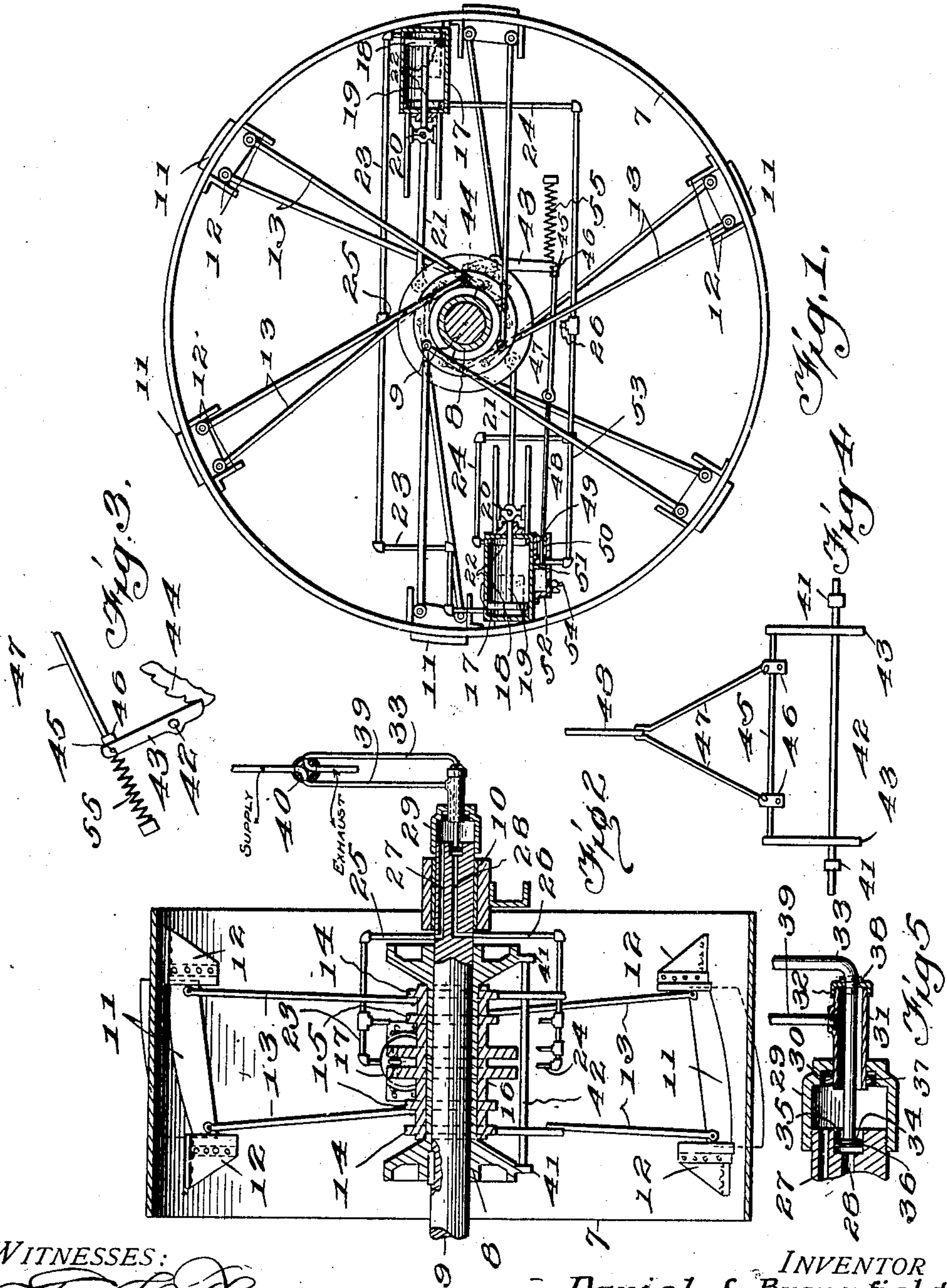
D. L. BROWNFIELD.

TRACTION WHEEL.

APPLICATION FILED JULY 17, 1908.

913,257.

Patented Feb. 23, 1909.



WITNESSES:

Geo. E. Tew

Arthur Haley

INVENTOR

Daniel L. Brownfield

BY

Geo. E. Tew

Attorney

UNITED STATES PATENT OFFICE.

DANIEL L. BROWNFIELD, OF FARMER, WASHINGTON, ASSIGNOR OF ONE-THIRD TO JOEL BROWNFIELD, AND ONE-THIRD TO ROBERT BROWNFIELD, BOTH OF FARMER, WASHINGTON.

TRACTION-WHEEL.

No. 913,257.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed July 17, 1908. Serial No. 444,008.

To all whom it may concern:

Be it known that I, DANIEL L. BROWNFIELD, citizen of the United States, residing at Farmer, in the county of Douglas and State of Washington, have invented certain new and useful Improvements in Traction-Wheels, of which the following is a specification.

This invention relates to traction-wheels, and has for its object to provide such a wheel with radially movable calks or mud-hooks together with improved means whereby they may be operated without stopping the machine, and to keep the wheel from slipping in soft ground.

In the accompanying drawing Figure 1 is a side elevation of the wheel, partly in section. Fig. 2 is a transverse sectional view. Figs. 3, 4 and 5 are details.

Referring specifically to the drawing 7 denotes the rim of the wheel, and 8 the hub. The spokes (not shown) may be connected to hub and rim in any suitable manner. The hub is keyed to the axle 9 as shown in Fig. 2. The bearings for the axles are indicated at 10.

On the rim 7 are mounted radially movable calks or mud hooks which are adapted to be projected from the rim edgewise or retracted as occasion may require. The calks are blades 11 which work in openings in the rim 7 and between guides 12 secured to the inner surface of the latter. The inner ends of the blades are connected by rods 13 to collars 14 and 15 respectively on a sleeve 16 which is rotatably mounted on the hub 8, the connection being such that when the sleeve is rotated in one direction the blades will be advanced and when rotated in the opposite direction they will be retracted. The blades are set at an angle to the face of the rim, and consequently the inner ends of one of the rods 13 is set a little in advance of the other.

To operate the sleeve for advancing or retarding the blades 11 as stated steam-power is employed. This operating mechanism comprises a pair of steam-cylinders 17, pistons 18 working therein, piston-rods 19, cross-heads 20, and connecting rods 21 secured at their outer ends to the sleeve. The steam-cylinders are mounted by means of suitable brackets on the rim 7 at diametrically opposite points. Two engines are preferably employed in order that the balance of the wheel may not be destroyed. At each

end of the cylinder are collars 22 for limiting the travel of the pistons.

The cylinders 17 are supplied with steam by pipes 23 and 24 respectively entering at opposite ends. The pipes 23 of the respective cylinders lead from a pipe 25 and the pipes 24 from a pipe 26. The pipes 25 and 26 connect with steam-passages 27 and 28 respectively in the axle 9. Said passages open into one end of the axle on which end is screwed or otherwise rigidly secured a cap 29. The outer end of the cap is reduced in diameter as indicated at 30 and has an opening through which a cylinder 31 enters the cap. The opening is so located that the cylinder is in axial alinement with the axle 9. The inner end of the cylinder is open and its outer end is closed by a cap 32 having an opening through which a pipe 33 enters. Said pipe extends through the cylinder spaced from the inside thereof, and through the cap, and is fitted at its inner end with a disk 34 which seats in a recess 35 made in the end of the axle with which recess the steam-passage 28 communicates so that the steam carried by the pipe 33 may enter said passage. The periphery of the disk 34 is fitted with a packing ring 36. That portion of the cylinder 31 which is located in the reduced portion 30 of the cap 29 is also provided with a disk 37 which fits snugly therein and has packing rings in its periphery.

The pipe 33 is secured to the cap 32 of the cylinder 31 by a lock-nut 38. A pipe 39 connects with the cylinder 31 on one side thereof. The pipes 33 and 39 lead to a suitable valve mechanism 40 for controlling the admission and exhaust of steam in the cylinders 17. A supply pipe leads from the valve to the boiler or other source of power.

By the construction herein described steam from the pipe 33 is prevented from entering the steam-passage 27 and steam from the pipe 39 is shut off from the passage 28, and at the same time the axle is free to rotate.

With the parts in the position shown in Fig. 2 the pipe 39 is the admission pipe and the pipe 33 the exhaust pipe. Steam enters the passage 27 and is carried to the cylinders 17 by the pipes 25 and 23. The exhaust is by the pipes 24 and 26, the passage 28, and the pipe 33. Steam now enters behind the pistons 18 to advance the same whereby the sleeve 16 is rotated in a direction to advance

the blades 11. When the position of the valve 40 is reversed, the travel of steam is reversed and steam enters in front of the pistons, whereby they are moved rearwardly and the sleeve is then rotated in a direction to retract the blades.

For holding the blades in set position the following mechanism is employed: On each side of the hub is a lug 41 in which is mounted a shaft 42 which turns therein. Keyed to this shaft are dogs 43 which engage ratchet teeth 44 on one side of the collars 14. The dogs are connected by a rod 45 on which are clamps 46 to which are hooked or otherwise secured branches 47 of a fork connected by a rod 48 to a cross-head 49 which is operated by the rod 50 of a piston 51 working in a cylinder 52 mounted on one of the cylinders 17. Steam is supplied to the cylinder 52 by a branch pipe 53 from the pipe 26. In the cylinder 52 is an exhaust opening 54. The dogs are held in operative position by means of a spring 55 which may be fastened to one of the spokes of the wheel. When the sleeve 16 is rotated in a direction to advance the blades 11 the dogs 43 slip over the ratchet teeth 44 and they prevent a retrogression of the blades, and when the sleeve is rotated in the opposite direction to retract the blades, the dogs are first released from the ratchets. Inasmuch as the pipes which convey steam to the cylinders 17 for the retraction of the blades also convey steam to the cylinder 51, the dogs will be released at the proper time. I have herein described steam as the motive fluid, but it will be understood that air, or any other fluid under pressure may be employed.

The blades 11 are more particularly adapted for soft ground. On hard, rocky ground spikes may be substituted.

The mechanism can be operated without stopping the travel of the machine.

I claim:

1. The combination with a traction-wheel having radially movable calks, of a sleeve rotatably mounted on the hub of the wheel, a connection between the sleeve and the calks,

and a motor operatively connected to the sleeve.

2. The combination with a traction-wheel having radially movable calks, of a sleeve rotatably mounted on the hub of the wheel, a connection between the sleeve and the calks, a motor operatively connected to the sleeve, a ratchet on the sleeve, and a dog cooperating therewith for holding the calks in adjusted position.

3. The combination with a traction-wheel having radially movable calks, of a sleeve rotatably mounted on the hub of the wheel, a connection between the sleeve and the calks, a motor operatively connected to the sleeve, a ratchet on the sleeve, a dog cooperating with the ratchet for holding the calks in adjusted position, and a motor operatively connected to the dog.

4. The combination with a traction-wheel having radially movable calks, of an axle having passages for a motive-fluid, a motor operatively connected to the calks, supply-pipes from the passages in the axle to the motor and means for separately conveying the motive fluid to the passages.

5. The combination with a traction-wheel having radially movable calks, of an axle having passages for a motive-fluid, a motor operatively connected to the calks, supply-pipes from the passages in the axle to the motor, a cap on the axle over the entrance of the passages, a cylinder entering the cap, the inner end of the cylinder being open and its outer end closed, a supply-pipe passing through the cylinder and spaced from the inside thereof, and connecting with one of the passages in the axle, a supply-pipe connected to the cylinder and connected through said cylinder and the cap with the other passage, and a valve-mechanism governing the flow in said pipes.

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

DANIEL L. BROWNFIELD.

Witnesses:

L. A. WESTON,
ROBERT WHEELER.