(No Model.) 2 Sheets—Sheet 1.

E. O. DOAK.

TRACTION WHEEL.

No. 458,290. Patented Aug. 25, 1891.

Fig. 3.

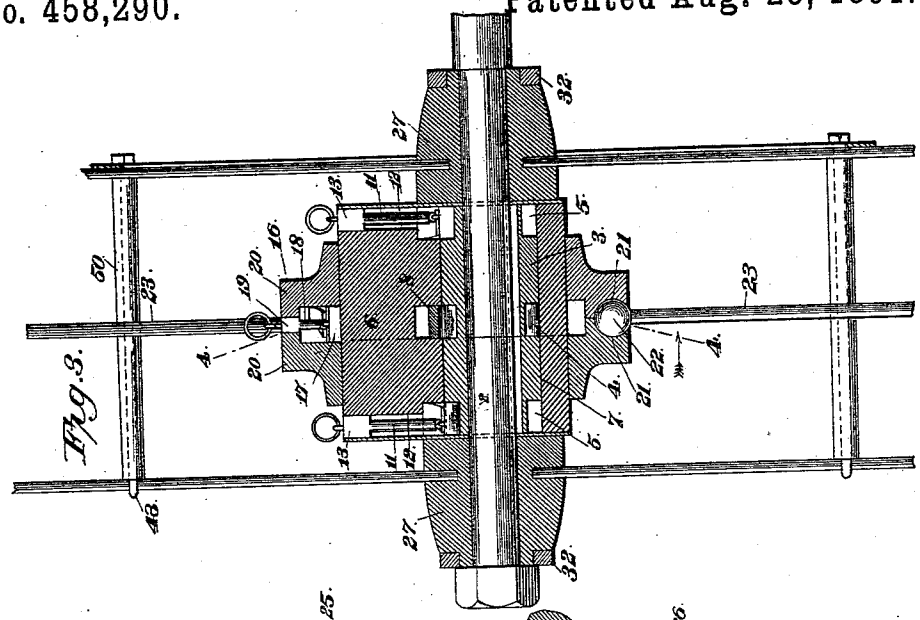
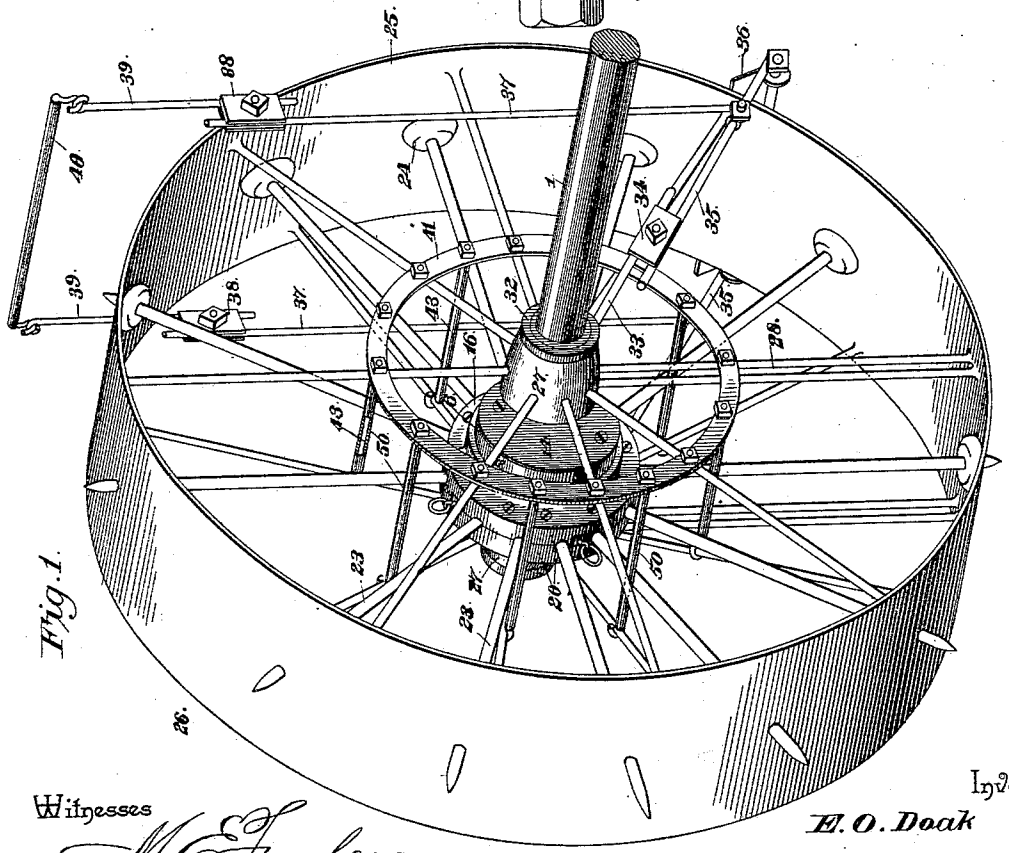


Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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TRACTION WHEEL.

No. 458,290. Patented Aug. 25, 1891.

Fig. 2.

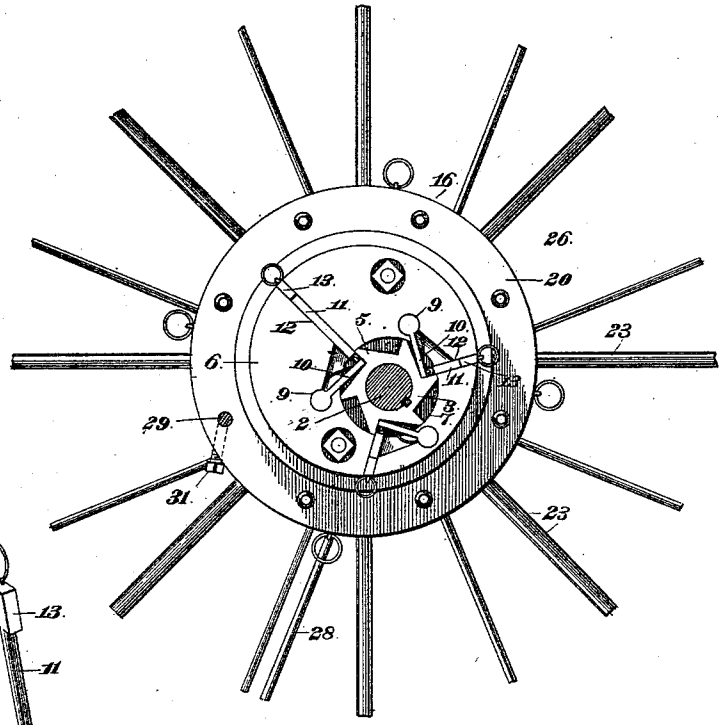


Fig. 5.

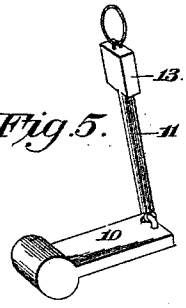
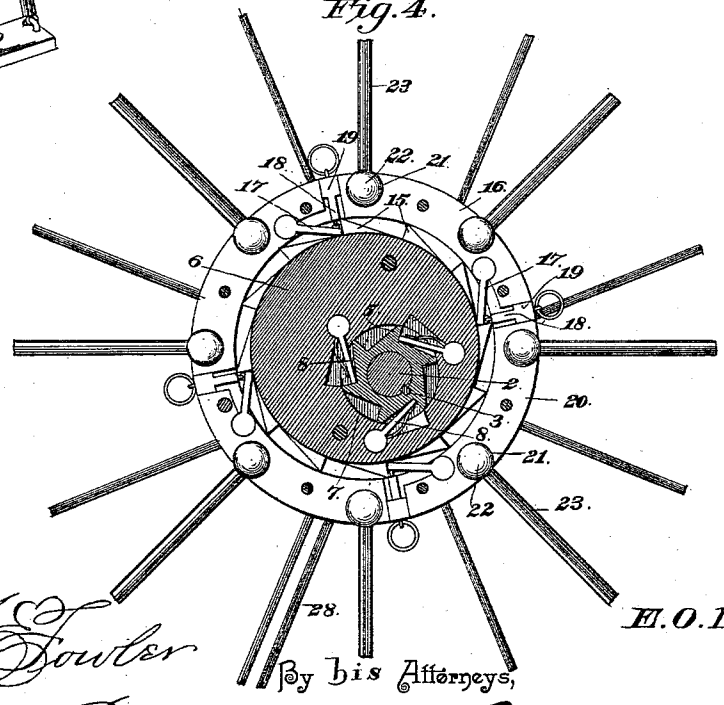


Fig. 4.



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UNITED STATES PATENT OFFICE.

EGBERT O. DOAK, OF STEAMBOAT ROCK, IOWA.

TRACTION-WHEEL.

SPECIFICATION forming part of Letters Patent No. 458,290, dated August 25, 1891.

Application filed March 4, 1891. Serial No. 383,733. (No model.)

To all whom it may concern:

Be it known that I, EGBERT O. DOAK, a citizen of the United States, residing at Steamboat Rock, in the county of Hardin and State of Iowa, have invented a new and useful Traction-Engine Wheel, of which the following is a specification.

This invention relates to wheels for traction-engines; and it has for its object to provide a wheel which shall be simple in construction and durable, and which shall be provided with adjustable mud-hooks adapted to be projected beyond the rim of the wheel to engage the surface of the road over which the machine is traveling, so as to prevent the wheel from slipping.

The invention further consists in improved mechanism by means of which the said mud-hooks may be caused to project any desired distance beyond the rim of the wheel, according to the condition of the road, and by which the said mud-hooks may be prevented from projecting at the lower part of the perimeter of the wheel when the machine is to pass over a bridge, for the purpose of preventing injury to the same.

The invention further consists in providing a wheel of the class described with a scraper, by means of which the rim of said wheel may be kept free from dirt.

With these ends in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of a traction-wheel constructed in accordance with my invention. Fig. 2 is a side elevation of the same with parts broken away for the purpose of showing the invention more clearly. Fig. 3 is a vertical transverse sectional view. Fig. 4 is a sectional view taken on the line 4 4 in Fig. 3. Fig. 5 is a perspective detail view of one of the keys for operating the pawls engaging the ratchet-wheels of the device.

Like numerals of reference indicate like parts in all the figures.

The rear axle of the traction-engine to which my invention is applied, and a portion of which (shown in the drawings hereto annexed) is designated 1, is provided with a spindle 2, upon which is keyed a collar 3, having a centrally-disposed ratchet-wheel 4 and provided at its ends with ratchet-wheels 5 5, the teeth of which face the opposite direction of the teeth of the ratchet-wheels 4.

6 designates an eccentric disk, which is provided with a central recess 7, in which is mounted a spring-actuated pawl 8, engaging the teeth or ratchets of the central ratchet-wheel 4. Although a single pawl to engage the teeth of this ratchet-wheel may be sufficient, yet it may be found desirable to use several additional pawls for the purpose of insuring sufficient strength. The ends of the eccentric disk 6 are provided each with a series of recesses, as 9, in which are seated dogs or pawls 10, adapted to engage the teeth of the ratchet-wheels 5. Suitably attached to the said dogs or pawls are the swiveled operating rods or handles 11, which project through suitable openings or grooves 12 in the ends of the eccentric disk and which are provided at their outer ends with T-heads 13, which may be turned at right angles to the slots through which they project when it shall be desired to hold the dogs or pawls 10 out of engagement with the ratchet-wheels 5. Plates 14, suitably secured to the ends of the eccentric disk, serve to secure the pawls and operating-handles in their respective recesses in the ends of the said disk. It will be observed that by the construction just described, when the pawls 8 and 10 are in engagement with the ratchet-wheels 4 and 5, respectively, the eccentric disk will be locked and held securely upon the axle through the medium of the collar 3, which, as before stated, is keyed upon the axle. When the pawls 10 are released from the teeth of the ratchet-wheels 5 and held out of engagement therewith, the eccentric disk may be turned to any desired position with relation to the axle 1, the spring-actuated pawl 8 slipping over the teeth of the ratchet-wheel 4. I also desire to state at this point that while I prefer to use two ratchet-wheels, as 5, one at each end of the eccentric disk, a single one would answer the purpose, the sole object being to lock the eccentric disk upon the axle.

The eccentric disk 6 is provided with a central series of teeth or ratchets 15, surrounded by the eccentric ring 16, which latter is made

in two parts or sections suitably bolted together and provided with one or more dogs or pawls 17, adapted to engage the teeth 15 and having handles 18, which are swiveled to said pawls and provided with T-heads 19, which may be turned at right angles to the slots through which they project, so as to hold the pawls 17 out of engagement with the teeth or ratchets 15.

The meeting faces of the parts or sections 20 of which the eccentric ring 16 is composed are provided with semi-spherical recesses 21 to receive the spherical knobs or heads 22 at the inner ends of the mud-hooks 23, of which any desired number may be used, and the outer ends of which are adapted to be projected through perforated bushings 24 in the rim or tire 25 of the traction-wheel. The latter, which is designated 26, may be of any suitable well-known construction, and is provided with independent hubs 27 27, which are journaled upon the spindle of the axle adjacent to the ends of the collar 3 and the eccentric disk 6.

The traction-wheel is provided with a pair of parallel spokes 28, placed closely adjacent to each other at each side of the wheel. A transverse rod 29 extends through and is mounted adjustably in the eccentric ring 16 by means of a set-screw 31. This rod is extended between the parallel spokes 28, thus causing the eccentric ring to be carried around with the wheel when the latter revolves upon the axle.

Suitably mounted upon the ends of the hubs 27 is a pair of rings 32, having projecting arms or brackets 33, which are connected adjustably by means of clamps 34 with the rods 35, carrying at their outer ends a scraper 36, adapted to bear against the rim or tire of the traction-wheel. Suitably connected with the rods 35 are auxiliary rods 37, which are connected by means of clamps 38 with rods 39, the outer ends of which are connected by a cross-bar 40, which may be connected with any convenient part of the traction-engine to which the device is applied for the purpose of holding the scraper securely at any desired adjustment where it will engage the rim or tire of the traction-wheel in such a manner as not to interfere with the operation of the mud-hooks. Suitably secured to the spokes at one side of the wheel is a ring 41, which is connected by means of hooked bolts 43 with the spokes of the other side of the wheel, thus serving to brace the two sides of the wheel and to hold them securely to the other. Said bolts are inclosed by tubular braces 50 for spacing the sides of the wheel.

The operation and advantages of this invention will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. Normally the dogs or pawls 17 are out of engagement with the teeth or ratchets 15 of the eccentric disk 6, and the pawls 8 and 10 of the latter are in engagement with the ratchet-wheels 4 and 5 of the collar 3, which is keyed upon and is practically a part of the axle. It follows that when the wheel revolves the mud-hooks which are carried by the eccentric disk will be successively projected to their full extent at the part of the rim or tire which is in radial alignment with the longest radius of the eccentric disk. Consequently when the said eccentric disk is adjusted with its longest radius in a downward direction the mud-hooks will be projected downwardly to their full extent to engage the surface of the road over which the machine is traveling. By adjusting the eccentric disk to a position forwardly or rearwardly of a downward direction the mud-hooks at the point where the rim or tire engages the surface of the road may be projected to a less extent, as may be found desirable, according to the condition of the road. By adjusting the eccentric disk with its widest portion in an upward direction the mud-hooks will be projected to their full extent at the portion of the rim or tire which is uppermost, while at the lower portion of the tire which engages the surface of the roller they will not be projected, thus enabling the machine to pass over bridges or over hard-surfaced roads without injury to the latter or to the wheels of the machine.

The adjustment of the eccentric disk upon the axle of the machine may be readily effected by releasing the pawls 10 from and holding them temporarily out of engagement with the ratchet-wheel 5, while the pawls 17 are thrown into engagement with the teeth or ratchets 15 of the eccentric disk. By partly rotating the traction-wheel the eccentric ring will thus carry the eccentric disk with it until the desired adjustment has been reached. The pawls 17 are then again thrown out of and the pawls 10 into engagement, and the machine is then ready to proceed as before.

By the construction of the scraper herein-before described it may be readily adjusted to engage any portion of the rim or tire at which the mud-hooks are not caused to project, thereby preventing the said scraper from interfering with the operation of the said mud-hooks.

Having thus described my invention, what I claim is—

1. A traction-wheel provided with an eccentric ring adapted to engage an eccentric disk connected with the axle and provided with spherical sockets, in combination with the mud-hooks provided with spherical heads, mounted in said sockets, and having their outer ends mounted in openings in the rim or tire of the wheel, through which they may be projected at any desired point, substantially as set forth.

2. The combination, with the axle having an eccentric disk, of the wheel having an eccentric ring and the parallel spokes, a rod extending through the eccentric ring and between said parallel spokes, and a series of mud-hooks connected with said eccentric ring

and having their outer ends mounted in perforations in the rim or tire, through which they may be projected at any desired point, substantially as set forth.

3. The combination, with the axle having an adjustable eccentric disk, of the wheel having an eccentric ring and the parallel spokes, a rod extending transversely through the eccentric ring and between the parallel spokes, and a series of mud-hooks connected with said eccentric ring and having their outer ends mounted in perforations in the rim or tire, through which they may be projected at any desired point, substantially as set forth.

4. The combination, with the axle having ratchet-wheels facing in opposite directions, of the eccentric disk provided with pawls engaging the said oppositely-facing ratchet-wheels, whereby the said eccentric disk may be locked upon the axle in various positions with relation to the latter, substantially as set forth.

5. The combination, with the axle having ratchet-wheels facing in opposite directions, of the eccentric disk having a series of spring-actuated pawls engaging the ratchet wheel or wheels facing in one direction and additional pawls engaging the wheel or wheels facing in the opposite direction and provided with handles by means of which they may be thrown temporarily out of engagement with said ratchet-wheels, substantially as set forth.

6. In a device of the class described, the combination, with the axle having ratchet-wheels, of the eccentric disk having pawls engaging the said ratchet-wheels and provided with swiveled handles having T-heads, which may be turned at right angles to the slots through which they project for the purpose of holding the pawls temporarily out of engagement with the said ratchets, substantially as set forth.

7. The combination of the axle having ratchet-wheels facing in opposite directions, the eccentric disk having pawls adapted to engage the said oppositely-facing ratchet-wheels and provided with teeth or ratchets upon its outer circumference, the traction-wheel mounted upon the axle, and the eccentric ring loosely connected with and adapted to be carried around with said wheel and having pawls adapted to engage the exterior ratchets upon the eccentric disk, said eccentric ring being suitably connected with mud-hooks adapted to be projected through perforations in the rim or tire of the wheel at any desired point, substantially as and for the purpose set forth.

8. In a device of the class described, the combination of the axle, the eccentric disk mounted adjustably thereon, the traction-wheel, the eccentric ring connected loosely with and adapted to be carried around with the traction-wheel, said eccentric ring being composed of two parts or sections suitably connected and provided in their meeting faces with semi-spherical recesses, and the mud-hooks provided at their inner ends with balls mounted in said recesses and having their outer ends mounted in perforations in the rim or tire of the wheel, substantially as and for the purpose set forth.

9. The combination of the axle, the eccentric disk mounted adjustably on the same, the traction-wheel having hubs mounted upon the axle adjacent to the ends of the eccentric disk and provided at opposite sides with pairs of parallel spokes, the eccentric ring having a transverse rod the ends of which are extended between said parallel spokes, and the mud-hooks suitably connected with said ring and having their outer ends mounted in perforations in the rim or tire of the traction-wheel, substantially as set forth.

10. In a device of the class described, the combination, with the axle having the eccentric disk, of the wheel having the eccentric ring, the mud-hooks having their inner ends suitably connected with said ring, and the perforated bushings attached to the rim or tire of the traction-wheel for the passage of the outer ends of said mud-hooks, substantially as and for the purpose set forth.

11. In a traction-wheel, the combination, with the radially movable or reciprocating mud-hooks, of a scraper having rods provided with rings journaled upon the hub of the wheel, whereby said scraper may be adjusted against the rim or tire of the wheel at any point at which the mud-hooks are not caused to project, substantially as and for the purpose set forth.

12. The combination of a traction-wheel having radially movable or reciprocating mud-hooks, rings journaled upon the hub of the wheel and having outwardly-extending arms or brackets, rods connected adjustably with the latter and carrying the scraper, and means for adjusting the latter to and retaining it in any desired position with relation to the rim or tire of the wheel, substantially as and for the purpose set forth.

13. In a traction-wheel of the class herein described, the combination of the rim or tire, the spokes connecting the latter with two independent lugs, and the ring secured to the spokes at one side of the wheel and connected by hooked bolts with the spokes at the opposite side of said wheel, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

EGBERT O. DOAK.

Witnesses:
GEO. W. WARD,
W. E. RATHBONE.