

No. 639,758.

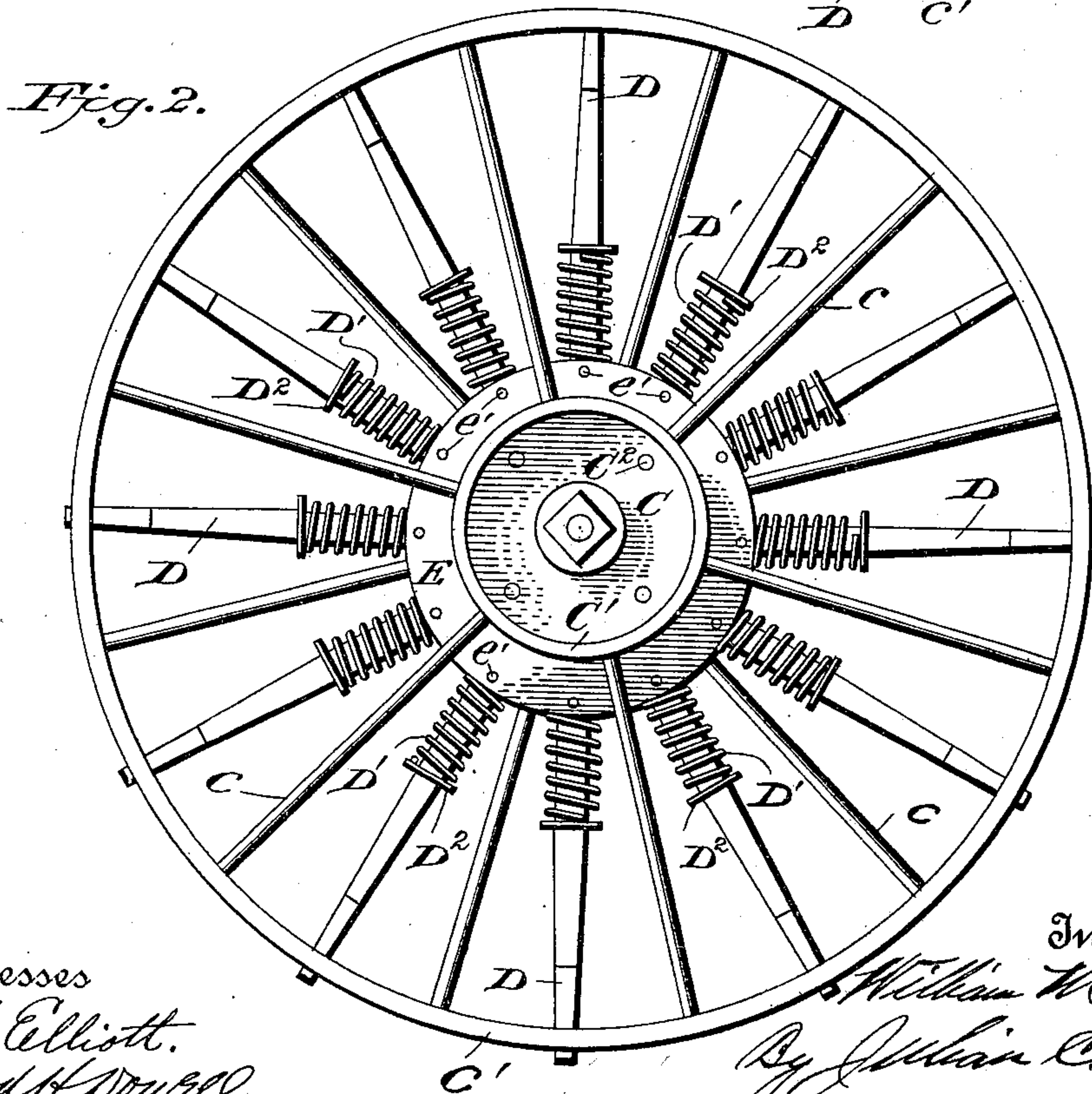
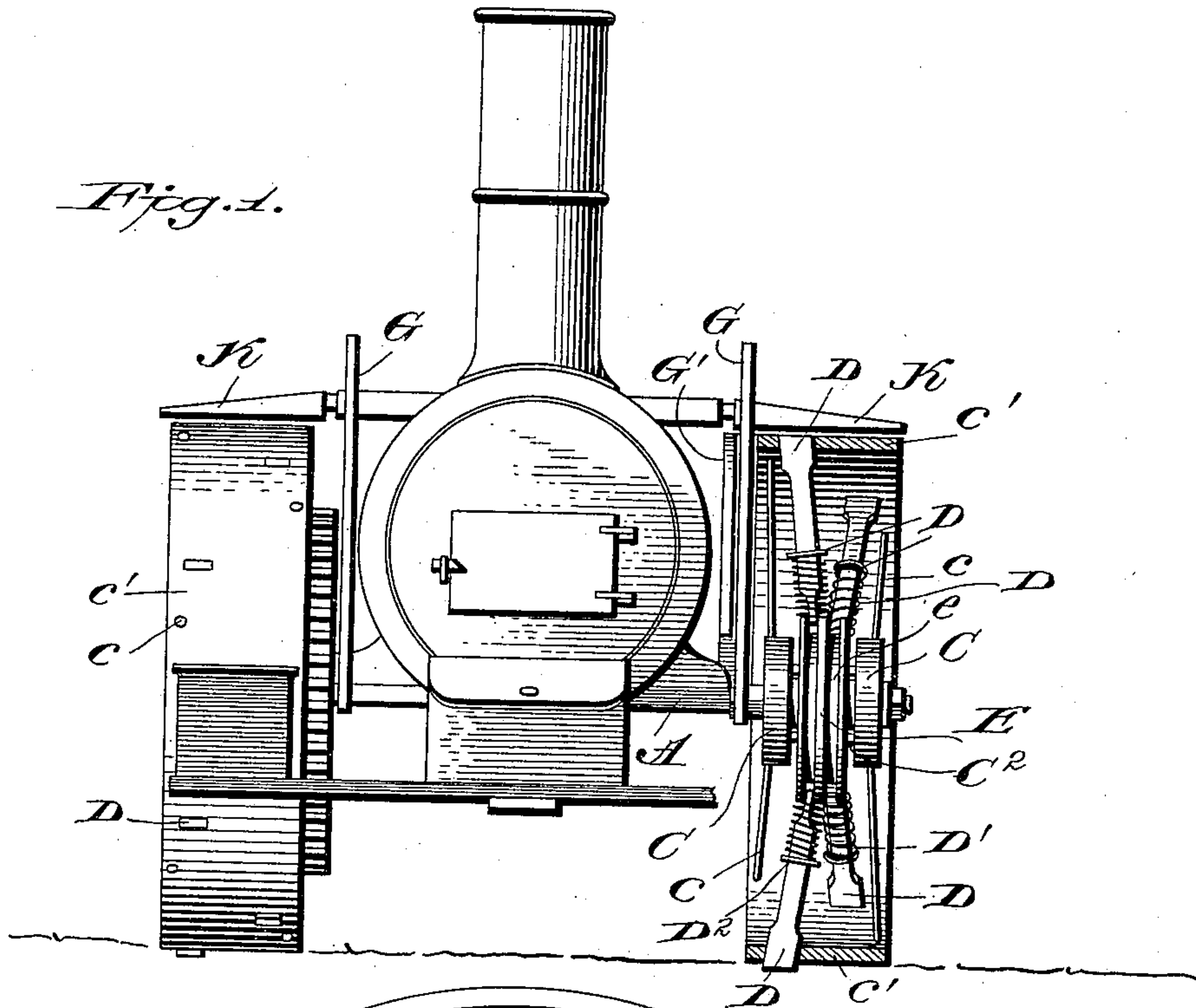
Patented Dec. 26, 1899.

W. McKONE.  
TRACTION WHEEL.

(Application filed Sept. 1, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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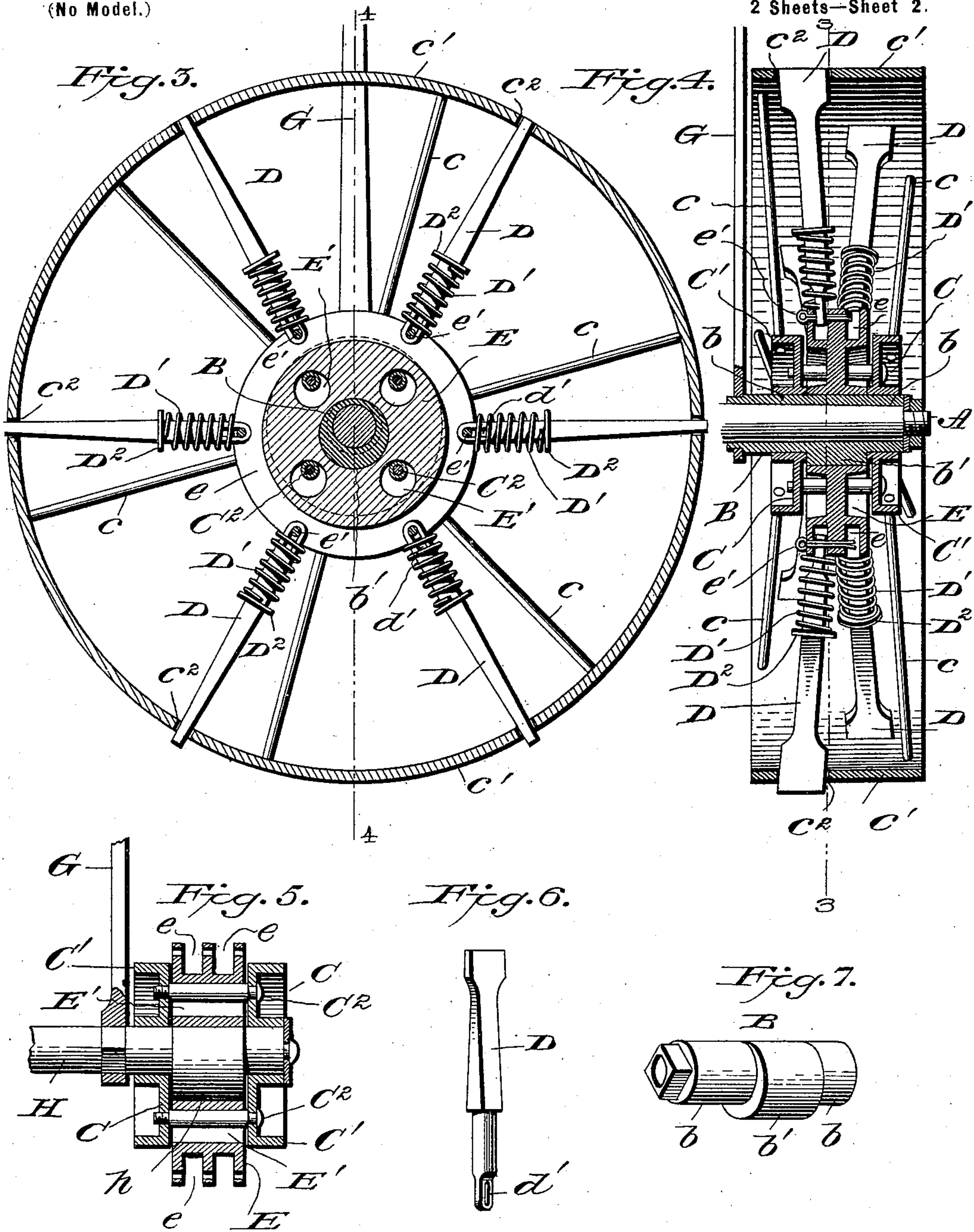
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# UNITED STATES PATENT OFFICE.

WILLIAM MCKONE, OF NEEPAWA, CANADA.

## TRACTION-WHEEL.

SPECIFICATION forming part of Letters Patent No. 639,758, dated December 26, 1899.

Application filed September 1, 1899. Serial No. 729,239. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM MCKONE, a citizen of Canada, residing at the town of Neepawa, in the county of Beautiful Plains and Province of Manitoba, Canada, have invented certain new and useful Improvements in Traction-Wheels; and I do hereby 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.

This invention is an improvement in traction-wheels especially designed for road-locomotives or "traction-engines;" but the principle of the invention when once understood may be embodied in various other wheels with good results. Its object is to provide the wheel with adjustable spuds, which can be so arranged that they may be projected from the lower side of the wheel, so as to insure its biting in the surface of the ground over which it is traveling or may be retracted, so as to leave the surface of the wheel smooth when it is traveling over bridges or other surfaces which spudded or rough-surfaced wheels would injure. The projection of the spuds from the lower side of the wheel can be controlled by a lever within easy reach of the engine-driver or operated by connections from any suitable or desired point.

The invention consists in the novel construction of the wheel as shown in the drawings and hereinafter described and claimed.

The accompanying drawings illustrate the best form of the invention now known to me, embodied in a road-locomotive or traction-engine wheel.

In the drawings, Figure 1 is a detail end elevation of a traction-engine, showing my improved traction-wheels applied thereto, one of said wheels being in section and the other in elevation. Fig. 2 is an enlarged face view of a wheel. Fig. 3 is a section through the wheel on line III III of Fig. 4. Fig. 4 is an enlarged detail transverse section on line IV IV, Fig. 3, looking inward. Fig. 5 is a detail view of a slight modification, and Figs. 6 and 7 are details.

A designates the spindle or axle, upon which the wheel is mounted and which may be of any suitable construction. Upon this spindle is fitted a sleeve B, which is cylindrical at

both ends *b*, yet has an intermediate eccentrically-shaped portion *b'*. On the cylindrical portions *b* of the sleeve are journaled the similar oppositely-facing part hubs C of the wheel proper. These part hubs are preferably provided with flanges C', to which are attached the spokes *c*, by which the hubs are secured to the rim *c'* of the wheel. This rim is provided with a series of openings *c''* for the passage of the spuds hereinafter referred to, and preferably these openings *c''* are arranged alternately near the opposite edges of the rim or tread of the wheel. On the eccentric portion *b'* of the sleeve is loosely journaled an annular disk or eccentric-ring E, which is confined in place between the part hubs C C, which latter are connected by through-bolts C'', which pass through openings E' in the disk E, and thus securely unite the part hubs, which may be properly distanced by shouldering the bolts or by distance-sleeves thereon, as may be preferred. The openings E' are large enough to permit the eccentric movement of the disk E relative to the part hubs, as hereinafter described; but the disk E will rotate with the wheel proper. This disk is preferably provided with peripheral grooves *e* in its periphery, which grooves are transfixed by pins *e'*, which transfix the inner ends of the radially-disposed series of spud-arms D, the inner ends of which spud-arms are preferably slotted, as shown at *d''*, which permits the spud-arms to have a slight radial movement. A stout coiled spring D' is interposed between a ring or shoulder D'' on the spud-arm and the periphery of the disk E, as shown, by which the spuds will be normally held outward with sufficient power to insure their biting into the surface of the ground if projected from the under side of the wheel; but should they strike an unyielding surface the spud-arms can move inward sufficiently to prevent injury thereof.

The sleeve B can be rocked upon the spindle A by any suitable means. Its rocking will not affect the position of the wheel relatively to the spindle, as the part hubs C are journaled upon the portions *b* of the sleeve which are concentric to the spindle; but this rocking of the sleeve will, through the eccentric portion *b'*, move the disk E eccentrically of



the part hubs and wheel proper, and the lengths of the spuds are such that some of the spuds will always be projected and others (diametrically opposite) always retracted from the tread of the wheel, according to the position of the disk E—*i. e.*, if the eccentric is displaced so that the disk is moved and held nearest the upper portion of the wheel the spuds will project through the slots *e* at the top of the wheel and will be retracted within or flush with the tread at the bottom of the wheel. On the other hand, if the sleeve be rocked so as to cause the disk E to take up a position nearest the lowest side of the wheel then the spuds will be retracted from the top and projected through the bottom of the tread of the wheel, and in this latter case they are in effective working position when the wheel is used as a traction-wheel, and the disk E maintains the eccentric position relatively to the tread of the wheel to which it has been adjusted by the rocking of the eccentric *b'*, although the disk rotates with the wheel, the disk rotating upon the eccentric portion *b'* of the sleeve, while the wheel proper rotates upon the cylindrical portions *b* of said sleeve.

When applied to a traction-engine, the sleeve B may be conveniently rocked by means of a lever G, fixed to the inner end of the sleeve, which lever may be guided in a slotted segment G' and may be provided with any suitable catch device to lock the lever and sleeve in either position desired—to wit, so as to cause the spuds to project from the bottom or from the top of the wheel at the will of the operator.

As shown, the disk E is provided with a double groove *e*, because two sets of spuds are employed, the spuds in the respective sets operating in the series of slots *c*<sup>2</sup> in the wheel, near the opposite sides thereof.

In wet countries the wheels of traction-engines are apt to clog up with mud, which causes the wheels to slip, rendering a forward movement impossible; but by making the spuds retractable, as in the present invention, they are cleaned by being retracted at each revolution of the wheel, and thus packing of the mud between the spuds is prevented. Further, a scraper K may be attached to the engine above the wheel to scrape the tread thereof, such scraper being made adjustable, so that it can be thrown out of the way when the spuds are projected from the upper side of the wheel.

When it is necessary to cross bridges or wooden pavements, which the spuds would be liable to damage, the under part of the wheel may be kept smooth by so adjusting the lever that the spuds will be retracted at the bottom of the wheel and projected from its top.

In the modification shown in Fig. 6 the hub of the wheel is shown journaled directly upon a cylindrical axle H and the disk E is mounted upon an eccentric *h*, which is fixed to the axle. In this construction the axle

should be so mounted (in any suitable way) that it may be turned bodily, so as to adjust the position of the disk E relatively to the tread of the wheel; otherwise the construction and operation of the wheel will be the same as before.

I do not limit myself to the employment of a double-grooved disk or double set of spuds or to the particular means of attaching the spuds to the wheel.

While I have described the invention as applied to a traction-wheel for road-engines, it may be employed in the construction of other wheels and for other purposes, and I do not wish to limit myself to its use solely for traction-engine wheels.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of a wheel having a two-part hub journaled upon a suitable support, an eccentric on said support between the parts of the hub, the eccentric disk on said eccentric, and the spuds connected to said disk and adapted to project through openings in the tread of the wheel, substantially as described.

2. The combination of a wheel having a hub journaled concentrically on a suitable support, an eccentric on said support and rotatable relatively to the wheel; and an eccentric disk on said eccentric rotating with the wheel and adjustable eccentrically thereof by said eccentric; with a series of spuds connected to said disk by their inner ends and having their outer ends guided in openings in the tread of the wheel and adapted to be projected therethrough, springs for normally holding said spuds extended from the disk, and means for adjusting the eccentric, substantially as described.

3. The combination of a wheel having a two-part hub concentrically journaled upon a suitable support, an eccentric on said support intermediate the parts of the hub, a disk rotatably mounted upon said eccentric and rotatable with the wheel said disk having annular grooves in its periphery and pins transfixing said grooves, a series of spuds having their inner ends transfixed by said pins and their outer ends guided in slots in the tread of the wheel, and means for adjusting the eccentric.

4. The combination of a wheel having a two-part hub concentrically journaled upon a suitable support, an eccentric on said support intermediate the parts of the hub; a disk rotatably mounted on said eccentric, a series of bolts connected to said two-part hub and passing through the openings in the web of said disk, a series of spuds having their inner ends attached to said disk and their outer ends guided in openings in the tread of the wheel, and means for adjusting said eccentric, substantially as described.

5. The combination of a sleeve journaled upon a suitable support having cylindrical



ends and an eccentric between the cylindrical ends, a wheel having a two-part hub respectively journaled on the cylindrical parts of the sleeve, the eccentric disk on the eccentric part of the sleeve, and the spuds connected to said disk and adapted to project through openings in the tread of the wheel, for the purpose and substantially as described.

6. The combination of a sleeve journaled concentrically on a suitable support and having cylindrical ends and an intermediate eccentric, a wheel having a two-part hub said parts being journaled on the cylindrical parts of the sleeve, and the eccentric disk on the eccentric part of the sleeve rotating with the wheel, with a series of spuds loosely connected to said disk at their inner ends and having their outer ends guided in openings in the tread of the wheel and adapted to be projected therethrough, a spring for normally holding said spuds extended from the disk, and means for partially rotating the sleeve, substantially as described.

7. The combination of a sleeve having a central eccentric and cylindrical ends at each side thereof, a wheel having a two-part hub each part being journaled upon one cylindrical end of the sleeve, an eccentric disk on said eccentric intermediate the parts of the hub, said disk having annular grooves in its periphery and pins transfixing said grooves, a series of spuds having their inner ends transfixed by said pins and their outer ends guided in slots in the tread of the wheel, and means for rotating said eccentric, substantially as described.

8. The combination of a wheel having a two-part hub concentrically journaled upon

a suitable support, an eccentric on said support intermediate the parts of the hub, a disk rotatably mounted on said eccentric and a series of bolts connected to said two-part hub and passing through openings in the web of said disk, said disk having annular grooves in its periphery, and pins transfixing said grooves; with a series of spuds having their inner ends slotted and transfixed by said pins, and their outer ends guided in slots in the tread of the wheel, springs for pushing said spuds outward from the disk, and means for adjusting said eccentric.

9. The combination of a spindle, the sleeve thereon having cylindrical ends concentric with the wheel and an intermediate eccentric portion; a wheel having a two-part hub, the parts of the hub being journaled on the concentric ends of the sleeve, a disk mounted on the eccentric portion of the sleeve between the parts of the hub, and bolts uniting the parts of the hub and passing through openings in the disk but not interfering with the eccentric movement of the latter relatively to the wheel; with spuds having their inner ends connected to the periphery of the disk by pins and slots, and their outer ends guided in openings in the tread of the wheel, and the lever and connections for rocking said sleeve upon the supporting-spindle, for the purpose and substantially as described.

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

WILLIAM McKONE.

Witnesses:

G. A. MATHERS,  
DELBERT THURSTON.