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TRACTOR WHEEL AND DRIVING MEANS.

APPLICATION FILED APR. 19, 1921.

1,434,006. Patented Oct. 31, 1922.

Fig. 1.

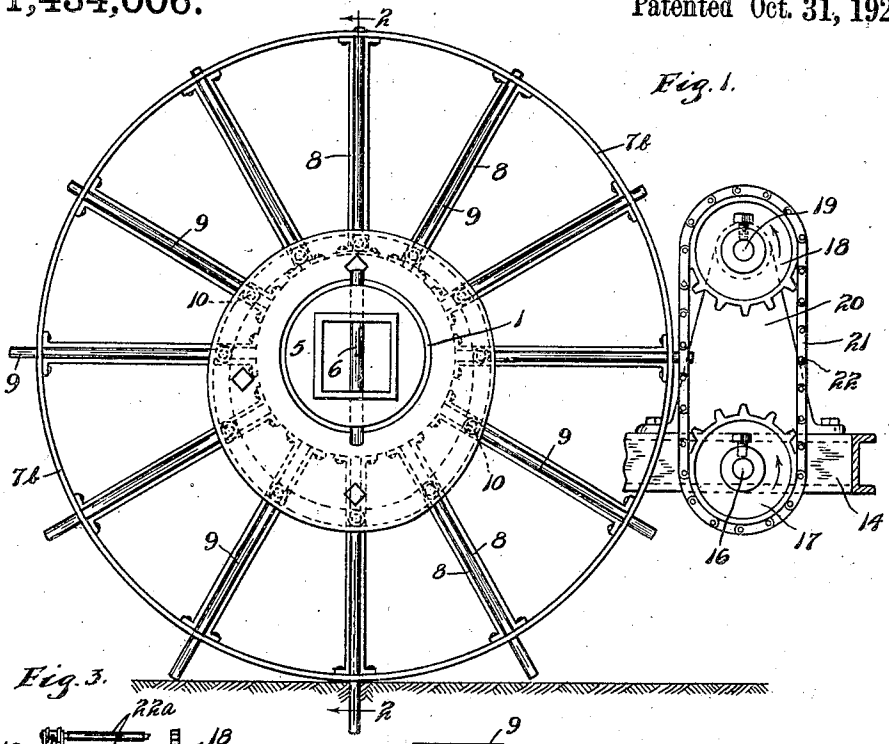
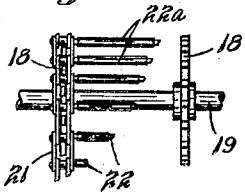


Fig. 3.



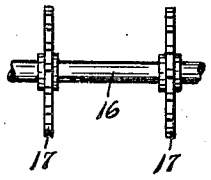
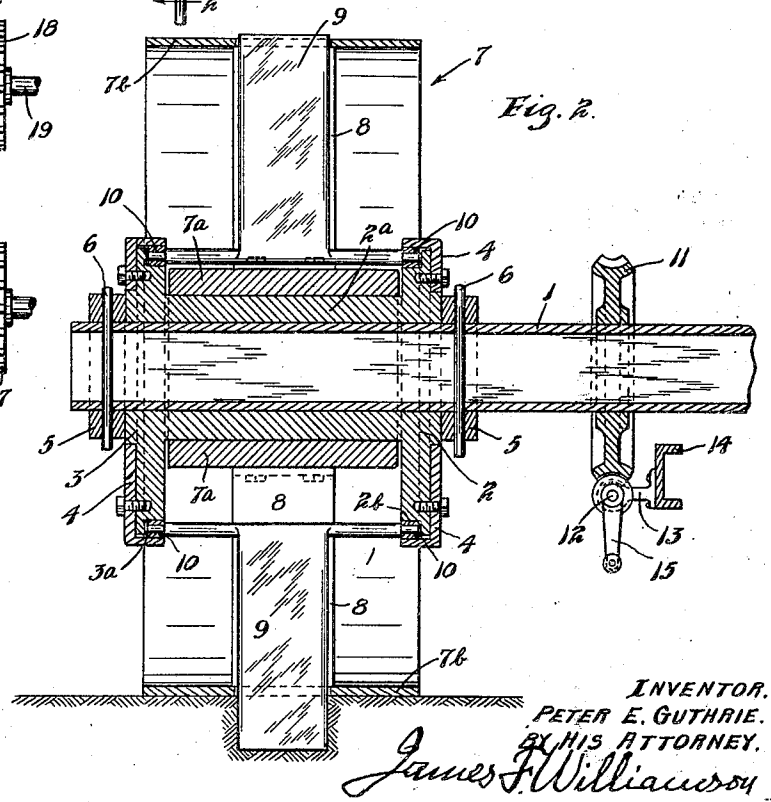


Fig. 2.



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UNITED STATES PATENT OFFICE.

PETER E. GUTHRIE, OF MORRISTOWN, SOUTH DAKOTA.

TRACTOR WHEEL AND DRIVING MEANS.

Application filed April 19, 1921. Serial No. 462,656.

To all whom it may concern:

Be it known that I, PETER E. GUTHRIE, a citizen of the United States, residing at Morristown, in the county of Corson and State of South Dakota, have invented certain new and useful Improvements in Tractor Wheels and Driving Means; 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 relates to a tractor wheel and the driving means for the same.

It is an object of this invention to provide a wheel having radial members therein which can be projected through the same to form driving cleats or projections to engage with the ground.

It is another object of the invention to provide such means and means disposed at one side of the wheel for engaging the projected ends of the same to drive the wheel.

It is still another object of the invention to provide the radially projecting members and an adjustable means for projecting the same so that they may be projected more or less at different points about the wheel.

These and other objects and advantages of invention will appear from the following description made in connection with the accompanying drawings in which like reference characters refer to the same parts throughout the different views and in which—

Fig. 1 is a view in side elevation of the wheel and driving means for the same;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1 looking in the direction of the arrows; and

Fig. 3 is a fragmentary view of the driving means as seen from the right of Fig. 1.

Referring to the drawings, the device comprises a shaft 1 upon which the wheel is mounted, which shaft is shown as of square or angular formation. On this shaft are disposed two members 2 and 3. The member 2 has a cylindrical sleeve portion 2^a suitably apertured to receive and fit on the shaft 1 and this member is formed at the end with an eccentric elliptical head having a groove 2^b formed on its inner side. The member 3 is formed similarly to the enlarged part of the member 2, being also apertured to receive the shaft 1 and having its periphery elliptical but eccentrically disposed in relation to the shaft. This member is also provided with a rectangular groove 3^a on its inner side. The members 2 and 3 have a central cylindrical boss at their outer portions arranged concentrically to the shaft 2 and cup-shaped members 4 fit about these bosses and have their flange portions fitting over the grooves 2^b and 3^a, these members being bolted to the members 2 and 3 by spaced screws surounding the central bosses thereon. It will thus be observed that the bottom of the grooves on the members 2 and 3 and the flanges of the members 4 form an eccentric cam path about the shaft 1, as clearly seen in Fig. 1. The members 2 and 3 are held in position in the shaft 1 by collars 5 secured adjacent thereto by pins 6 which pass through the same and the said shaft.

The wheel 7 comprises a hub portion 7^a disposed about the sleeve 2^a and a rim portion 7^b. Spaced flat members 8 having their ends out-turned to form attaching flanges are bolted or riveted to the inside of the rim and the said hub member. These members 8 constitute spaced radial spokes and flat bars 9 are disposed therebetween and adapted to project at their outer ends through rectangular slots formed in the member 7^b. At their inner ends the members 9 have laterally extending arms or shafts formed with reduced journals at their ends on which are carried cam rollers 10, which cam rollers are disposed in the cam path heretofore described, which is formed by the members 2, 3 and 4. The shaft 1 is provided at one side of the wheel with a worm wheel 11 suitably apertured to fit thereon and a worm and worm shaft 12 are mounted in small brackets 13 secured to the frame 14 of the tractor. The worm shaft 12 is provided with a hand crank 15 by which the same may be turned to turn the worm wheel 11, the shaft 1 and the members 2 and 3, thus turning the eccentrics 2 and 3 in relation to the wheel 7.

A driving shaft 16 is suitably supported in the frame of the tractor and a pair of sprocket wheels 17 are secured thereto in spaced relation and in alinement with a similar pair of sprocket wheels 18 secured to a countershaft 19 which is supported in suitable brackets 20 also secured to the frame 14 of the tractor. The sprocket wheels are attached to the shafts by set screws passing through the hubs thereof and a pair of chains 21 are disposed over the alined pairs of wheels 17 and 18. The links of these chains are connected by rods 22 forming the link

pivots and extending from one chain to the other on which are rollers 22^a. As shown in Fig. 1, one side of the chains passing between the pairs of sprockets, travels in close proximity to the rim of the wheel 7 and the ends of the members 9 projecting from the rim pass between the rods 22, and rollers 22^a thereon.

The operation of the device will be clear from the above description. Power being applied to the shaft 16 the sprocket 17 will move the chains 21 and the connecting bars 22. The rollers 22^a will engage successively with the members 9 and the wheels 7 will thus be turned and its hub portion 7^a will turn on the sleeve 2^a of the member 2. As the wheel turns about the sleeve 2^a the rollers 10 moving in the cam path above described will be moved relatively to the member 7 and the hub 7^a and members 9 will be projected at different distances outside of the member 7^b at different points about the wheel. As shown in Fig. 1, the widest part of the eccentric is at the bottom of the wheel and the members 9 are thus projected to the greatest extent directly below the wheel. It will be observed, however, that by turning the crank 15, the position of the eccentric relatively to the wheel may be changed so that the maximum projection of the member 9 can be made to occur at any point thereabout. The members 9 form the friction or driving teeth or cleats in the wheel and if the ground is very soft, the eccentric may be disposed as shown in Fig. 1. Where the ground is hard, however, and it is not necessary to have such long teeth, the eccentric may be turned so that the teeth will project at the bottom of the wheel any desired distance from the minimum shown at the top of the wheel in Fig. 1 to the maximum shown at the bottom thereof. It will always be necessary, of course, to drive the wheel to have the teeth extended sufficiently at the side thereof to be engaged by the bars 22.

The form of the eccentric cam path traveled by rollers 10 is not that of a regular or true eccentric circle, but of somewhat irregular cam shape. The portion thereof, as shown, acting on the rollers to control the teeth or grouters 9 at the period of their contact with the rollers 22^a being concentric with the hub 7^a. With the eccentric in the position shown in Fig. 1 the members 9 will thus be projected a uniform distance during their travel past the chain 21 and rollers 22^a.

From the above description it is seen that applicant has provided a simple construction of tractor wheel and one in which the driving teeth or cleats are permanently and adjustably carried therein.

The parts of the wheel are comparatively few and the same can be rapidly made and quickly assembled. When the wheel is once assembled, it forms a compact and rigid structure having no tendency to become disarranged and requires practically no attention.

It will, of course, be understood that various changes may be made in the form, details and arrangement of the device without departing from the scope of applicant's invention, which, generally stated, consists in the matter shown and described and set forth in the appended claims.

What is claimed is:

1. A device of the class described having in combination a wheel comprising a rim portion, radially disposed driving members projecting through said rim portion and slidably mounted in said wheel and having projections extending at each side of their inner ends parallel to the axis of said wheel, rollers on said projections; and means for projecting said members through the rim different distances at different parts of the wheel as the same is rotated comprising eccentrics at each side of the wheel having grooves in which said rollers are disposed.

2. A tractor wheel comprising a rim portion and a cylindrical hub portion, radial spokes comprising spaced members secured to said rim and hub portions and forming a guideway therebetween, a shaft about which said wheel rotates, and eccentric means carried by said shaft, members slidable in said guideways and adapted to project through said rim and being connected at their inner ends to said eccentrics whereby as the wheel rotates, the same will be projected different distances through said rim.

3. A tractor structure comprising a wheel support, a wheel rotatably mounted thereon, a plurality of radial cleat members adapted to be projected through the rim of said wheel, means on said wheel support for projecting and withdrawing the cleat members, and means engaging the projected cleat members at one side of the wheel to turn the wheel.

4. A tractor wheel comprising a hub and rim portion, an angular shaft, a sleeve disposed on said shaft and having a cylindrical surface on which the said hub of the wheel rotates, said sleeve having eccentrics formed at each end thereof and radially disposed members having their outer ends projecting through said rim and connected at their inner ends to said eccentrics whereby the same will be projected through said rim at varying distances as the wheel is rotated.

5. A wheel comprising a rim portion, radially disposed cleats projecting through said rim, a square shaft, a member having a flange at each end and having a square aperture therethrough disposed on said shaft, means for holding said member against longitudinal movement on said

shaft, a hub for said wheel journaled on said member between the flanges thereof, said flanges comprising means engaging and moving said cleat members.

6. A wheel structure comprising a wheel having a hub and rim, radially disposed cleats projecting through said rim, spokes for said wheel comprising guide-ways for said cleats, and a member on which the hub of the wheel is journaled having means for moving said cleat members inwardly and outwardly in said guide-ways.

7. A device of the class described comprising a wheel having a hub and a rim portion, radially disposed cleat members projecting through said rim, a shaft, a member mounted thereon and carrying the wheel hub, means on said member comprising an elliptical eccentric cam for moving said cleat members inwardly and outwardly.

8. A device in the class described comprising a wheel having a hub and rim, spokes comprising spaced members connected to said hub and rim, cleats slidable between said spaced members and projecting through said rim, and a member on which said hub is journaled having means engaging said cleat members for projecting the same through the rim.

9. A device of the class described having in combination a square shaft, a member having a square aperture therethrough fitted on said shaft and having an eccentric flange on one end, a wheel having a rim portion and a hub portion journaled on said member, radially disposed cleats slidably mounted in said wheel to project through said rim, and means on the ends of said cleats engaging said eccentric flange to move said cleats inwardly and outwardly.

In testimony whereof I affix my signature.

PETER E. GUTHRIE.