

Oct. 26, 1937.

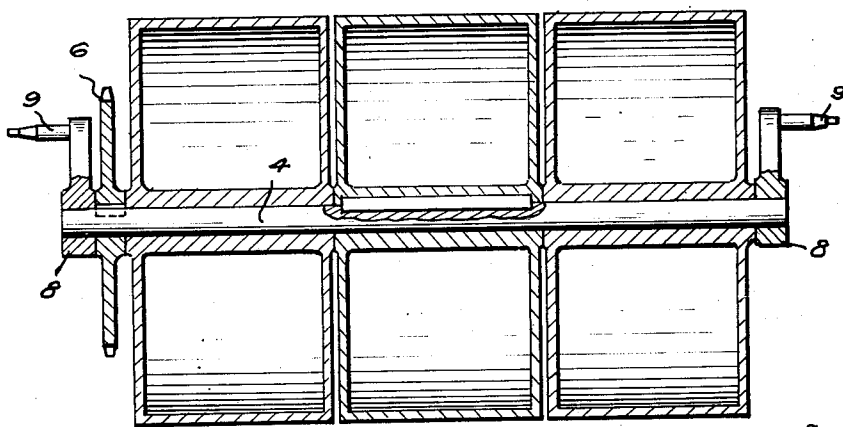
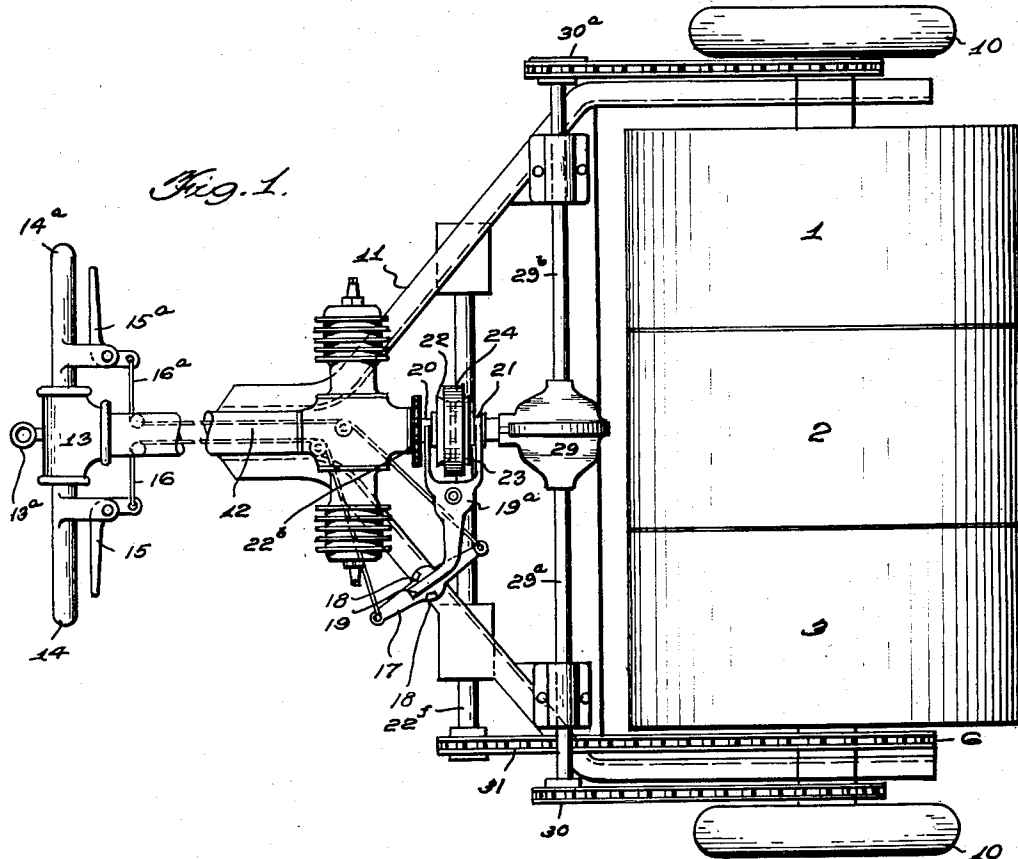
B. MOORE, JR

2,096,911

PROPULSION MEANS FOR ROLLERS

Filed April 10, 1936

2 Sheets-Sheet 1



Inventor

Bart Moore, Jr.

By Samuel Herriek,
Attorney

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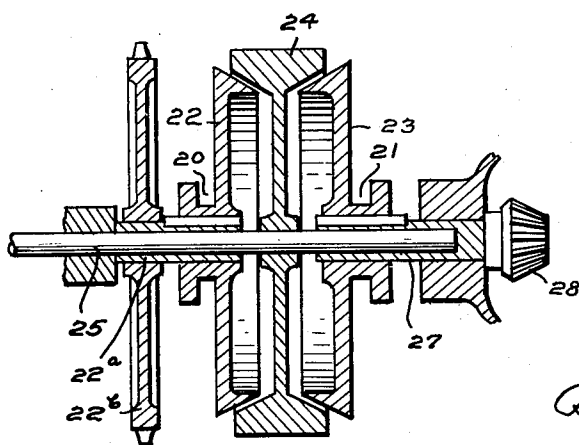
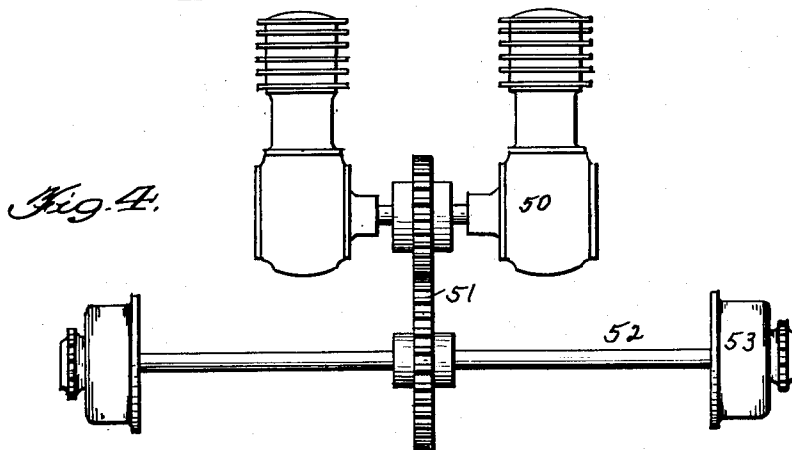
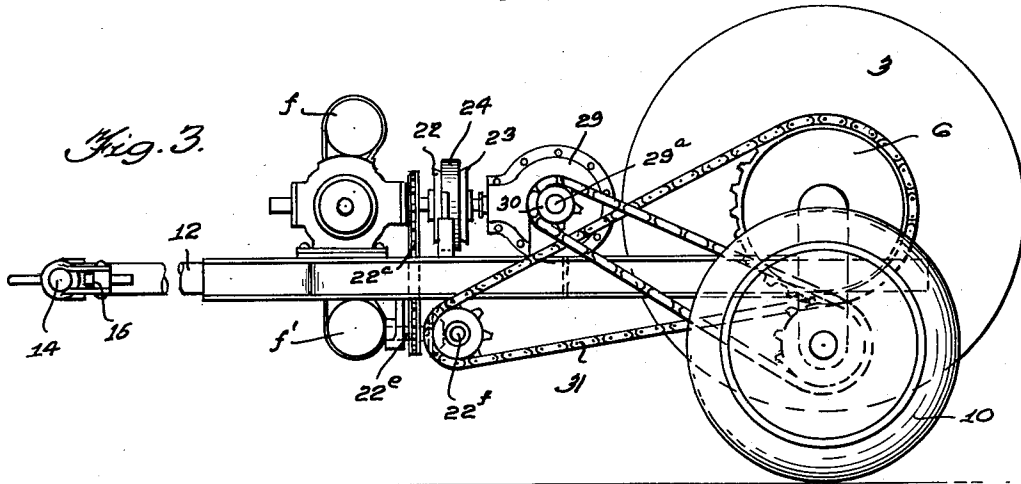
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PROPULSION MEANS FOR ROLLERS

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2 Sheets-Sheet 2



Inventor

Bart Moore for.

By Samuel Herriek,
Attorney

UNITED STATES PATENT OFFICE

2,096,911

PROPULSION MEANS FOR ROLLERS

Bart Moore, Jr., San Antonio, Tex.

Application April 10, 1936, Serial No. 73,755

12 Claims. (Cl. 94—50)

This invention relates to wheeled, power-driven rollers, and it has for its object to provide a wheeled roller of the type in which the roller may be caused to rest upon the ground to perform its rolling function or may be elevated from the ground by being rocked on to supporting ground wheels which function when the roller is to be transported from place to place, together with power means, such as an internal combustion engine, for example, by which the rollers or the ground wheels may be positively driven.

In the particular form of the invention chosen for purposes of illustration, I have shown a roller of the character of that illustrated in United States Patent #1,886,367, issued to E. V. Biles on the 8th day of November, 1932.

Further objects and advantages of the invention will be set forth in the detailed description which follows.

In the accompanying drawings:

Figure 1 is a plan view illustrating one embodiment of the invention;

Fig. 2 is a vertical sectional view through the rollers of Fig. 1;

Fig. 3 is a side elevation;

Fig. 4 is a detail view of the clutch mechanism, hereinafter described, and

Fig. 5 is a detail view of a modified form of drive which may be employed, if desired.

Like numerals designate corresponding parts throughout the several figures of the drawings.

The roller, in the present embodiment of the invention, is divided into the three sections, 1, 2 and 3. The two outer sections, 1 and 3, are free to turn with respect to the main shaft 4, while the central section 2 is keyed to said shaft. A spur gear wheel 6 is keyed, as indicated at 7, upon the shaft, so that rotation of said gear wheel will impart rotation to the shaft and to the central roller section 2 for the purpose of impelling the machine forward in the exercise of its rolling function.

The outer ends of the shaft 4 are mounted for rotation in the extensions 8 of the main frame. The opposite ends of these extensions carry spindles 9 upon which ground wheels 10 are mounted for rotation. These ground wheels are preferably rubber-tired, and when they are brought into engagement with the ground, they provide means for transporting the whole apparatus easily and relatively noiselessly from one point of operation to another. These rollers are frequently towed behind trucks or other motor vehicles, but they may be transported under the power of the engine to the point of use.

The bearing extensions 8 project from a main frame 11, which is preferably of structural steel such as a channel iron, for example, and this frame is preferably counterweighted at 11^a in any suitable manner, as, for example, by filling that portion of the channel which lies rearwardly of the ground wheels with lead. This counterweighting is for the purpose of aiding in balancing the weight of the engine and its associated parts.

The forward portions of the side members of the frame are brought to a point adjacent each other and suitably attached to a tongue consisting of a pipe section 12. A T, 13, on the end of this pipe section receives the handle extensions 14, 14^a, by which the roller may be guided by hand. The T, 13, also carries an eye 13^a, so that the section 12 may function as a draw bar when the structure is being towed behind a vehicle such as a truck or automobile.

Bell crank levers 15, 15^a are pivoted in extensions 15^b, 15^c. Cables 16, 16^a attached to these levers, may be drawn upon by the manipulation of these levers to function after the manner of tiller ropes to act to rock a tiller head 17. This tiller head at its central portion carries the cam lugs 18. These lugs are arranged to engage the tail 19 of a fork 19^a. The prongs of this fork engage in the grooves 20 and 21 of clutch disks 22 and 23.

A fly wheel 24 is fixed upon the shaft 25 of a horizontal type, internal combustion engine that is mounted upon the frame 11. The outer ends of the engine shaft (see Fig. 4) have a bearing in a sleeve 27, which carries the driving pinion 28 of a differential mechanism, indicated in a general way at 29.

Drive shafts 29^a, 29^b extend from this differential mechanism and drive through the sprocket mechanism 30, 30^a to the ground wheels 10. The differential pinion 28 is set in motion whenever the clutch disk 23 is brought into engagement with the fly wheel 24, it being understood that said clutch disk is splined upon the sleeve 27.

When the engine is to be used to drive the roller section 2, the handles 15, 15^a are so manipulated as to withdraw the clutch disk 23 and move the clutch disk 22 into engagement with the fly wheel. Then the fly wheel drives the clutch disk 22, and this in turn imparts motion through a sleeve 22^a, to which the clutch disk 22 is splined, to a spur gear wheel 22^b.

This gear wheel drives through a suitable chain or other connection 22^c to a shaft 22^d, and this shaft in turn drives through suitable bevel gear-

ing to a transverse shaft 22'. The latter shaft in turn drives through sprocket connections 31 to gear 8 and consequently to the roller section 2.

In moving the apparatus to lift the rollers bodily from the ground and to support the structure upon the ground wheels, the handle or draw bar 12 is swung bodily from one side of the rollers to the other, and the reverse operation takes place when the rollers are to be lowered into engagement with the ground, and the ground wheels are to be elevated.

It is common practice to use mixing valves instead of carburetors with internal combustion engines, and these work as well in inverted position as in any other. In order that there may be gravity feed of fuel to the engine in either position of the tongue or draw bar, I employ two fuel tanks, *f, f'*, one or the other of which will supply fuel to the mixing valve, not shown.

While I have illustrated a drive from the engine to both the rollers and the ground wheels 10, I wish it to be understood that many of the features of the present invention are of utility whether there is a drive to the ground wheels or not. For example, an engine mounted upon the bodily invertible frame of a wheeled roller of the character of that illustrated in the Biles patent aforesaid is novel and of marked utility irrespective of whether the ground wheels are power-driven or not.

Further, the invention is not limited to the particular mechanical elements that I have chosen for purposes of illustration. While they are simple, economical and efficient, other ways may be devised for driving the rollers from an engine supported upon the bodily invertible tongue, and I wish to make it clear that the invention includes within its purview such changes in design as fairly come within the terms of the appended claims.

No attempt has been made to illustrate the various refinements of construction which the skilled engineer may readily resort to without more than mechanical skill. It is manifest that the substitution of roller or ball bearings for the plain bearings of the roller sections 1 and 2, or the provision of roller bearings for the ground wheels upon the spindles 9, are mere matters of choice.

Having described my invention, what I claim is:

1. A structure comprising a bodily invertible frame, ground wheels, and a roller mounted for rotation upon said frame and upon axes eccentric with respect to each other so that either the roller or the ground wheels may be brought into ground engaging position by the act of inverting the frame, an engine permanently mounted upon the bodily invertible frame and operable in both positions of said engine, and means for driving the roller from said engine.

2. A structure comprising a bodily invertible frame, ground wheels, and a roller mounted for rotation upon said frame and upon axes eccentric with respect to each other so that either the roller or the ground wheels may be brought into ground engaging position by the act of inverting the frame, an engine permanently mounted upon the bodily invertible frame and operable in both positions of said engine, and means for driving the ground wheels from said engine.

3. A structure comprising a bodily invertible frame, ground wheels, and a roller mounted for rotation upon said frame and upon axes eccentric with respect to each other so that either the roller or the ground wheels may be brought into ground

engaging position by the act of inverting the frame, an engine permanently mounted upon the bodily invertible frame and operable in both positions of said engine, and means for driving either the ground wheels or the roller from said engine.

4. A structure of the character described comprising a roller, a shaft upon which said roller is fixed, a bodily invertible frame comprising a tongue or draw bar and in which said shaft is mounted for rotation, an engine permanently mounted upon and bodily invertible with the frame, and means for driving from said engine to said shaft to thereby drive the roller, said engine being operable in both positions of said frame.

5. A structure as recited in claim 4, in combination with means for supplying fuel to said engine in either position of the invertible frame.

6. In combination, a bodily invertible frame, a roller and ground wheels mounted to turn with respect to said frame about axes eccentric with respect to each other, an engine permanently mounted upon said frame, driving mechanism between the engine and the roller and between the engine and the ground wheels, and clutch mechanism for throwing either of said driving mechanisms into and out of action, said engine being operable in both positions of said frame.

7. A structure as recited in claim 6, in combination with a handle constituting a part of said frame, and controlling means for the clutch mechanism so closely associated with said handle that the handle and the control means of the clutch may be grasped simultaneously.

8. The combination with a roller, of associated ground wheels, a bodily invertible frame, means for mounting the roller and the ground wheels upon said frame but upon axes eccentric with respect to each other, an engine permanently mounted upon the bodily invertible frame, driving mechanism between said engine and the roller, a handle extension upon the frame, a clutch between the engine and the roller, and means for controlling said clutch, said controlling means lying in such juxtaposition to the handle that it may be grasped and manipulated simultaneously with the grasping of the handle, said engine being operable in both positions of said frame.

9. In combination with a roller structure comprising a bodily invertible frame, a roller and ground wheels eccentrically mounted with respect to each other upon said frame and a handle extension constituting a part of said frame and having a pair of hand grasp portions, of an engine mounted upon said frame and bodily invertible therewith, connections between the engine and the roller comprising a clutch, a pivoted fork lever for actuating said clutch, a pair of bell crank levers associated with the hand grasp portions of the handle and adapted to be manipulated simultaneously with the grasping of said handle, and connections between the fork lever and the bell crank levers as and for the purposes set forth, and means for feeding fuel to said engine in either of the positions of said frame.

10. The combination with a bodily invertible frame, of a roller and ground wheels eccentrically mounted with respect to each other upon said frame, said frame having a handle extension terminating in a pair of transversely disposed hand grasp portions, an engine mounted upon and bodily invertible with the frame, driving connections between the engine and the ground wheels comprising sprocket connections, and a

transverse shaft with which said connections are engaged and which shaft includes a differential mechanism in its length, a clutch, means for driving the said transverse shaft from the clutch and through the differential mechanism, a second transverse shaft, sprocket connections between the second transverse shaft and the roller, means for driving from the clutch to the second transverse shaft, a clutch shifting element comprising a forked lever, operating levers associated with the hand grasp portions and operating connections between the operating levers and the clutch shifting element.

11. The combination with a bodily invertible frame, of a roller and ground wheels eccentrically mounted with respect to each other upon said frame in such manner that by the bodily reversal of said frame either the roller or the ground wheels may be brought into use, an internal combustion engine mounted upon said frame with its

cylinder horizontally disposed, said engine being bodily invertible with the frame and its cylinder lying horizontally of said frame, and connections between the engine and the roller.

12. The combination with a bodily invertible frame, of a roller and ground wheels eccentrically mounted with respect to each other upon said frame in such manner that by the bodily reversal of said frame either the roller or the ground wheels may be brought into use, an internal combustion engine mounted upon said frame with its cylinder horizontally disposed, said engine being bodily invertible with the frame and its cylinder lying horizontally of said frame, connections between the engine and the roller, and connections between the engine and the ground wheels and control means for rendering the action of the engine effective or ineffective with respect to the roller and with respect to the ground wheels.

BART MOORE, JR. 20