

No. 830,600.

PATENTED SEPT. 11, 1906.

M. W. KOUNS.  
MOTOR CAR.

APPLICATION FILED MAR. 8, 1906.

2 SHEETS—SHEET 1.

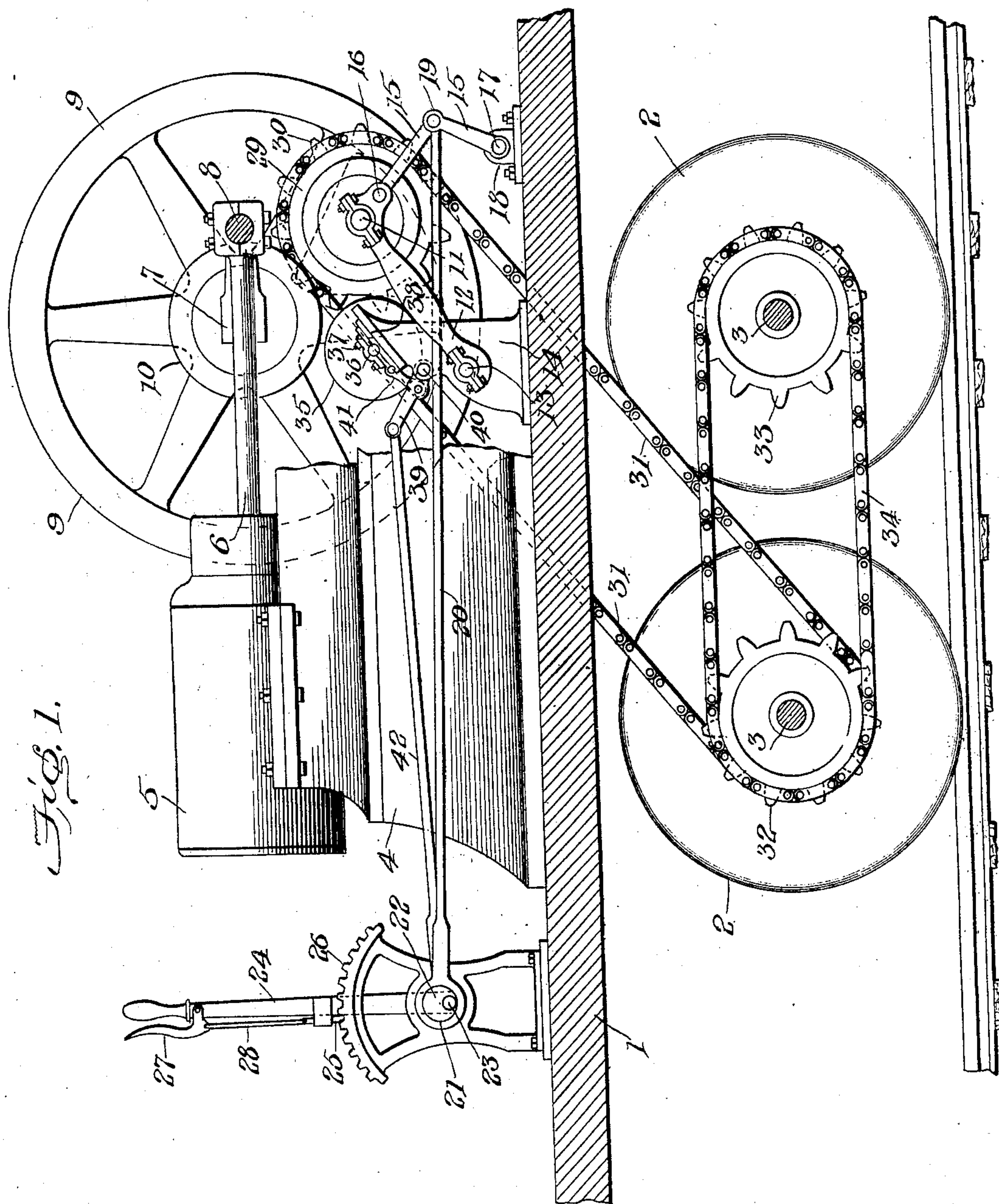


Fig. 1.

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Witnesses

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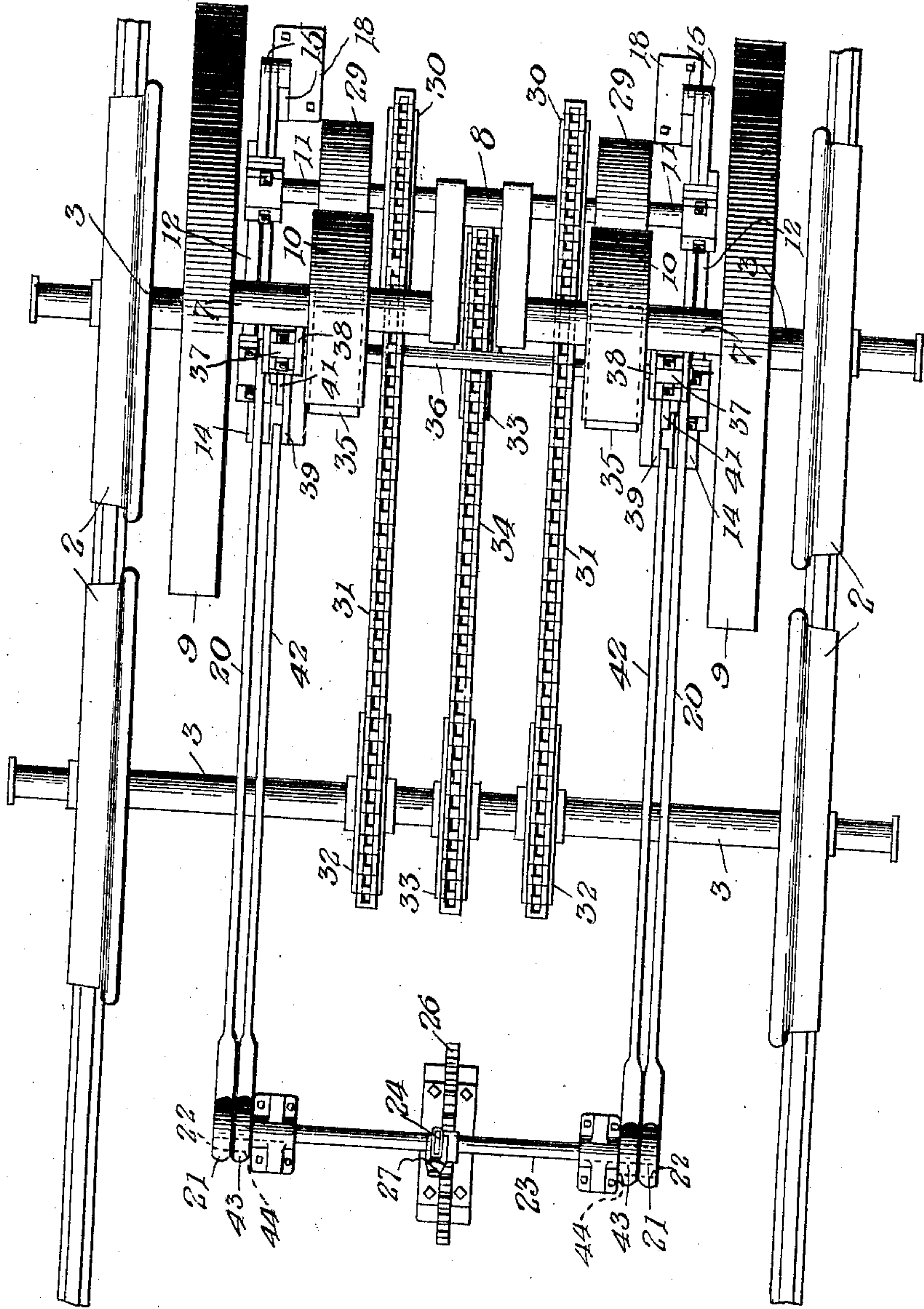
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2 SHEETS—SHEET 2.

*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

MOSES W. KOUNS, OF WASHINGTON COURT-HOUSE, OHIO, ASSIGNOR TO  
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## MOTOR-CAR.

No. 830,600.

Specification of Letters Patent.

Patented Sept. 11, 1906.

Application filed March 8, 1906. Serial No. 304,905.

*To all whom it may concern:*

Be it known that I, MOSES W. KOUNS, a citizen of the United States, residing at Washington Court-House, in the county of Fayette and State of Ohio, have invented certain new and useful Improvements in Motor-Cars, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to motor-cars, being designed more particularly for use in connection with street-railway cars and cars employed on ordinary and interurban railways, being self-propelling railway-cars carrying their own motive power, although some of the features of the invention are applicable to other similar structures, such as traction-engines and other motor-vehicles.

The invention has for its object to provide a simple, efficient, and readily-controlled driving mechanism, whereby motive power derived from an explosive-engine, such as a gasolene or other liquid fuel engine, running always in the same direction and usually in continuous operation, may be transmitted to the driving-wheels of the car or vehicle.

To these ends my invention consists in certain novel features, which I will now proceed to describe and will then particularly point out in the claims

In the accompanying drawings, Figure 1 is a side view, partly in elevation and partly in vertical section, of a structure embodying my invention in one form; and Fig. 2 is a plan view of a portion of what is shown in Fig. 1.

Referring to the said drawings, 1 indicates the body of the car or vehicle, only the framing of the floor or supporting-platform thereof being shown, and 2 the supporting or driving wheels, mounted on axles 3 and supporting the body 1 in any suitable manner. On the car-body 1 is mounted an explosive motor, preferably in the form of a gasolene-engine, comprising a frame 4, cylinder 5, piston-rod 6, and engine-shaft 7, provided with a crank 8 and fly-wheels 9. This engine-shaft is provided with one or more friction-wheels 10 secured thereon, and in my preferred construction I employ two such friction-wheels, as shown, located one on each side of the

11 indicates a counter-shaft mounted in suitable boxes in the free ends of arms 12, which are pivotally supported, as indicated at 13, on suitable brackets 14 on the frame or body 1. The position of each arm 12 and of the counter-shaft 11 is controlled by toggle-levers 15, of which a pair is employed for each of the arms 12. Each pair of toggle-levers has one end of one of the levers pivoted to the corresponding arm 12, as indicated at 16, while one end of the other lever is pivoted to the frame or body 1, as indicated at 17, said frame or body being provided with a bracket 18 to effect this pivotal connection. To the knuckle or pivot joint 19, which connects the two toggle-levers 15, there is pivoted one end of a rod 20, the other end of which is connected to a strap 21, which embraces an eccentric 22 on a shaft 23, mounted in suitable bearings on the frame or body 1. A hand-lever 24 controls the movements of the shaft 23, said hand-lever being provided with the usual locking-pawl 25, cooperating with the locking-segment 26 and controlled by the handpiece 27 through the medium of the connecting-rod 28. The counter-shaft 11 is provided with friction-wheels 29, corresponding with and adapted to engage the friction-wheels 10 of the engine-shaft.

It will be seen that by moving the hand-lever 24 from the position shown in Fig. 1 in the direction indicated by the arrow adjacent thereto the rock-shaft 23 and eccentric 22 will so move the rod 20 as to actuate the toggle-levers 15 and cause them to swing the arms 12 upward, thereby so moving the counter-shaft 11 as to bring the friction-wheels 29 thereon into engagement with the friction-wheels 10 on the engine-shaft and press said friction-wheels together with a force sufficient to insure the proper transmission of power to the counter-shaft. Said counter-shaft is provided with one or more sprocket-wheels 30 thereon, two being preferably employed, as shown. Sprocket-chains 31 pass around these sprocket-wheels 30 and also around sprocket-wheels 32 on the axle 3 of one of the pairs of driving-wheels 2.

If desired, motion may be transmitted to the other axle to cause the other pair of wheels to also act as driving-wheels by means of sprocket-wheels 33 on the two axles, con-



ected by a sprocket-chain 34. When the friction-wheels 29 are thus engaged with the friction-wheels 10, motion is imparted to the car or vehicle in a forward direction.

5 In order to permit the car to be driven in the opposite direction, I provide means for driving the counter-shaft 11 in a direction the reverse of that just described. This comprises friction-wheels 35, two in number  
10 in the present instance, and adapted to simultaneously contact with the friction-wheels 10 and 29. To this end these friction-wheels 35 are mounted upon a shaft 36, said shaft being in turn mounted in bearing-boxes 37, which  
15 are supported on slideways 38 on the upper ends of the brackets 14. The arrangement is such that the shaft 36 and its friction-wheels 35 move in a direction substantially parallel with the arms 12 and transversely to the  
20 plane of the axes of the shafts 7 and 11, so as to bring said friction-wheels simultaneously into contact with the friction-wheels 10 and 29. This movement is effected by means of levers 39, pivoted at 40 to the brackets 14  
25 and connected between their ends to the sliding boxes 37 by means of links or connecting-rods 41. The free ends of the levers 39 are connected by rods 42 to straps 43, encircling eccentrics 44 on the rock-shaft 23. The con-  
30 struction and arrangement of the parts is such that in the position shown the friction-wheels 29 and 35 are not in contact with the friction-wheels 10, and when the hand-lever 24 is moved, in the manner hereinbefore described,  
35 in the direction of the arrow adjacent thereto, so as to bring the friction-wheels 29 into contact with the friction-wheels 10, the friction-wheels 35 move away from said friction-wheels 10. On the other hand, when the lever 24 is  
40 moved in the opposite direction from the position shown the friction-wheels 35 are so moved as to come into contact with the friction-wheels 10 and 29 while these latter are separated, thereby driving the counter-shaft, and  
45 consequently the car, in the opposite direction. It will be understood, of course, that when the parts are in the position shown neither of the friction-wheels 35 nor 29 are in contact with the friction-wheels 10, so that no power  
50 is transmitted from the engine to the driving-wheels, and the motion of the car is stopped. It will also be understood that the frictional drive permits the regulation of the speed of the car by controlling the amount of slipping  
55 between the frictional driving-wheels, so as to cause the counter-shaft and the parts driven therefrom to rotate at any desired speed relatively to the engine. It will thus be seen that the structure is simple and effi-  
60 cient and is effectively controlled by a single hand-lever, by means of which the car may be stopped or driven in either direction at any desired speed.

I wish it to be understood that I do not de-  
65 sire to be limited to the exact details of con-

struction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus fully described my invention, what I claim as new, and desire to secure by 70 Letters Patent, is—

1. In a structure of the character described, the combination, with a friction-wheel driven from the engine, a second friction-wheel movable toward and from the same and from 75 which the driving-wheels are actuated, of a reversing friction-wheel, a shaft supporting said reversing friction-wheel, bearings for said shaft slidably mounted in a plane transverse to the plane of the axes of the other 80 friction-wheels, and means for shifting said reversing friction-wheel toward the other friction-wheels when the same are out of engagement, and for shifting the same away from 85 such friction-wheel when the same are in engagement with each other, substantially as described.

2. In a structure of the character described, the combination, with a friction-wheel driven from the engine, a second friction-wheel 90 movable toward and from the same and from which the driving-wheels are actuated, of a reversing friction-wheel, a shaft supporting said reversing friction-wheel, bearings for said shaft slidably mounted in a plane trans- 95 verse to the plane of the axes of the other friction-wheels, and simultaneous means for shifting said reversing friction-wheel toward the other friction-wheels when the same are out of engagement, and for shifting the same 100 away from such friction-wheels when the same are in engagement with each other, substantially as described.

3. In a structure of the character described, the combination, with a frame, a friction- 105 wheel driven from the engine, a second friction-wheel movable toward and from the same and from which the driving-wheels are actuated, supports carried by said frame, bearings mounted on the upper face of said 110 supports and adapted to slide in a plane transverse to the plane of the axes of said friction-wheels, a shaft mounted in said bearings, a reversing friction-wheel carried by said shaft, arms pivoted to said supports be- 115 low said bearings and adapted to support said second friction-wheel, and means for simultaneously shifting said second friction-wheel toward the first-mentioned friction-wheel and shifting said reversing friction- 120 wheel away from said other friction-wheels and for shifting said second-mentioned friction-wheel away from the first-mentioned wheel and shifting the reversing friction-wheel into engagement with both of said 125 other friction-wheels, substantially as described.

4. In a structure of the character described, the combination, with a frame or body and driving-wheels supporting the same, of an en- 130



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gine of the character described mounted on said frame, a shaft driven by said engine and having a friction-wheel thereon, a counter-shaft provided with a friction-wheel adapted to engage the engine-shaft friction-wheel and having a driving connection with the driving-wheels, pivoted arms carrying said counter-shaft to permit it to move toward and from the engine-shaft, a reversing-shaft provided with a friction-wheel and having bearings mounted to slide toward and from the plane of the axes of the engine-shaft and counter-shaft, a rock-shaft provided with a controlling-lever, and rods actuated by said rock-shaft and connected with the pivoted arms and sliding bearings to simultaneously move the counter-shaft and reversing-shaft, whereby their movement in one direction engages the counter-shaft friction-wheel with the engine-shaft friction-wheel and disengages the reversing-shaft friction-wheel therefrom, while movement in the opposite direction disengages the counter-shaft and engine-shaft friction-wheels and engages the reversing friction-wheel with both of said other friction-wheels, substantially as described.

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5. In a structure of the character described, the combination, with a frame or body and driving-wheels supporting the same, of an engine of the character described mounted on said frame, a shaft driven by said engine and having a friction-wheel thereon, a counter-

shaft provided with a friction-wheel adapted to engage the engine-shaft friction-wheel 35 and having a driving connection with the driving-wheels, pivoted arms carrying said counter-shaft to permit it to move toward and from the engine-shaft, toggle-levers connecting said arms with the frame or body, a 40 reversing-shaft provided with a friction-wheel and having bearings mounted to slide toward and from the plane of the axes of the engine-shaft and counter-shaft, levers connected to said bearings to slide the same, a 45 rock-shaft provided with a controlling-lever, and rods actuated by said rock-shaft and connected with the toggle-levers and bearing sliding levers to simultaneously move the counter-shaft and reversing-shaft, whereby 50 their movement in one direction engages the counter-shaft friction-wheel with the engine-shaft friction-wheel and disengages the reversing-shaft friction-wheel therefrom, while movement in the opposite direction 55 disengages the counter-shaft and engine-shaft friction-wheels and engages the reversing friction-wheel with both of said other friction-wheels, substantially as described.

In testimony whereof I affix my signature 60 in presence of two witnesses.

MOSES W. KOUNS.

Witnesses:

W. R. HARE,  
A. B. WHITNEY.