

more sets of sun and planet gear wheels between the shaft of the motor and the driving axle of the vehicle, the wheels of each set being differently proportioned to each other, a locking device for each of said sets of gear wheels for bringing it into operative connection with the motor shaft, and means for bringing into operation any one of said locking devices, substantially as described. 7th. The combination of a vehicle, a battery and electric motor mounted thereon, a train of sun and planet gear wheels connecting the motor shaft with the vehicle axle and a friction brake controlling the operative engagement of the sheet with the gear wheels, the transmitted speed increasing relatively to the amount of pressure applied to the brake, substantially as described. 8th. The combination of a vehicle, an electric motor mounted thereon, a train of gear wheels connecting the motor shaft with the vehicle axle, one of said gear wheels having an oscillating and also a rotary motion, a rotary pulley normally rotating with said oscillating gear, and friction brakes for restraining the rotation of said pulley, and thereby bringing the train of gear into operative engagement with the shaft, substantially as described. 9th. The combination with a vehicle, of a motor therefor, a chain for transmitting power from the motor, a traction shaft, a gear wheel mounted so as to turn upon said traction shaft, said springs having a reversible action and forming a springy connection between the gear wheel and the traction shaft in whichever direction the gear wheel tends to revolve, substantially as set forth. 10th. In a vehicle propelling apparatus, the combination, with the traction shaft, of a driving gear wheel mounted thereon, and driven from the vehicle motor, a flange keyed to said traction shaft, and springs connecting the gear wheel with the flange, provided at each end with bearings upon the flange and the gear wheel, whereby the operation of the springs may be reversed on the reversal of the rotation of the gear wheel, substantially as set forth. 11th. In a vehicle propelling apparatus, the combination, with the traction shaft 39, of gear wheel 37, 38, mounted thereon and driven from the vehicle motor, sleeve 40, provided with flanges 41, cap 42, provided with flanges 43 and springs 47, substantially as set forth. 12th. In a vehicle propelling apparatus, the combination, with the traction shaft 39, of a gear wheel 37, 38, mounted thereon and driven from the vehicle motor, flanges 43, 41, recessed as shown and described, and rods 46, substantially as set forth. 13th. The combination, with a vehicle, of a motor therefor, a motor shaft, a traction shaft, two sprocket wheels, one on each shaft, one of said sprocket wheels being mounted so as to turn upon its shaft, a chain connecting said sprocket wheels, a sleeve fixed to the shaft alongside of the freely revolving sprocket wheel, and flexible connections uniting said sleeve and freely revolving sprocket wheel in such manner as to normally tend to hold the hub and wheel in a certain fixed relation to each other and to permit a limited relative motion between them in either direction under tension, substantially as described. 14th. The combination, with a vehicle body, of a motor mounted thereon, two traction shafts, and sprocket chains connecting the motor shaft with the traction shafts, one of the sprocket chain wheels having a springy connection with its shaft, substantially as described. 15th. The combination of a vehicle body with a truck for supporting the same, springs between the vehicle body and the truck, a motor mounted upon the vehicle body, two traction shafts mounted in the truck, and sprocket chains connecting the motor shaft with the traction shafts, one of the sprocket chain wheels having a springy connection with its shaft, substantially as described. 16th. The combination of a vehicle body with a truck for supporting the same, springs between the vehicle body and the truck, a motor mounted upon the vehicle body, two traction shafts mounted in the truck, and sprocket chains connecting the motor shaft with the traction shafts, a sprocket wheel for each of said chains having a springy connection with its shaft, substantially as described. 17th. The combination of a vehicle body with a truck for supporting the same, springs between the vehicle body and the truck, an electric motor mounted upon the vehicle body, two traction shafts mounted in the truck, and sprocket chains connecting the electric motor shaft with the traction shafts, one of the sprocket chain wheels having a springy connection with its shaft, substantially as described. 18th. The combination of a vehicle body with a truck for supporting the same, springs between the vehicle body and the truck, an electric motor mounted upon the vehicle body, two traction shafts mounted in the truck, sprocket chains connecting the electric motor shaft with the traction shafts, and a sprocket wheel for each of said chains having a springy connection with its shaft, substantially as described. 19th. The combination of a vehicle, an electric motor mounted thereon, sun and planet gear wheels connecting the motor shaft with the driving axle of the vehicle, and guides for securing a constant parallel motion of the driving member of the sun and planet gear, substantially as described. 20th. The combination of a vehicle, a motor mounted thereon, sun and planet gear wheels connecting the motor shaft with the driving axle of the vehicle, and a friction brake connected with one of the said gear wheels, whereby the said gear wheel may be thrown into or out of operative engagement, substantially as set forth. 21st. The combination of a vehicle, a motor mounted thereon, a shaft for said motor, provided with an eccentric, a train of sun and planet gear wheels between said shaft and the driving axle of the vehicle, one wheel of said train being loosely mounted upon said eccentric, and a friction brake connected with said wheel, whereby the said wheel may be locked, so as to partially or wholly check its rotation about its own centre, substantially as described. 22nd. The combination

of a vehicle, a motor mounted thereon, a shaft for said motor provided with an eccentric, a train of sun and planet gear wheels connecting said shaft with the driving axle of the vehicle, one wheel of said train being loosely fitted upon said eccentric and adapted to rotate about the same as a centre, a friction pulley mounted to revolve freely, and guides connecting the wheel fitted upon the eccentric and the pulley, whereby they are caused to revolve together, substantially as described. 23rd. The combination of a vehicle, a motor mounted thereon, a shaft for said motor, two or more sets of sun and planet gear wheels between the shaft and the driving axle of the vehicle, the wheels of each set being differently proportioned to each other, and guides for securing parallelism of motion of one member of each of said sets of gear wheels, and means for bringing into operation either of said guides, substantially as described. 24th. The combination of a vehicle, a motor mounted thereon, a shaft for said motor, two or more sets of sun and planet gear wheels between the motor shaft and the driving axle of the vehicle, the wheels of each set being differently proportioned to each other, guides for securing parallelism of the driving member of each of said sets of gear, and means for controlling said guides by which either of said guides may be thrown into operation, each of the other guides being in such position of the controlling mechanism thrown out of operation, substantially as described. 25th. The combination of a vehicle, a motor mounted thereon, a train of gear wheels between the motor shaft and the driving axle of the vehicle, one member of said train being normally rotated by the motor shaft when the train is out of operative engagement therewith, a rotating pulley connected by guides with the normally rotating gear, and friction brakes for arresting said pulley, and thereby bringing the train of gear into operative engagement with the motor shaft, substantially as set forth. 26th. The combination of a vehicle, a motor therefor, a rotating brake device mounted upon the motor shaft, a set of differential gear wheels between the motor shaft and the driving axle of the vehicle, and guides connecting said gear wheels and said rotating device, whereby the operation of the gear wheels may be controlled, substantially as set forth. 27th. The combination of a vehicle, a motor mounted thereon, and a train of sun and planet gear wheels between the motor shaft and the driving axle of the vehicle, the initial wheel of said train maintaining in its movements positions of parallelism with itself when transmitting power, substantially as set forth. 28th. The combination of a vehicle, a motor mounted thereon, a series of sun and planet gear wheels between the shaft of the motor and the driving axle of the vehicle, the initial wheel of said series maintaining positions of parallelism with itself while operative to transmit motion, and guides for partially suspending the operation of said initial wheel, and thereby creating changes of speed in the transmitted motion, substantially as set forth. 29th. The combination of a vehicle, a motor mounted thereon, a train of gear wheels connecting the shaft of the motor with the driving axle of the vehicle, and a friction brake controlling the operative engagement of the shaft with the gear wheels, the transmitted speed increasing relatively to the amount of pressure applied to the brakes, substantially as set forth. 30th. In the propulsion of vehicles and the like by electric motors actuated by batteries, the method of obtaining the maximum effect from the motor without deterioration of the battery, which consists in maintaining the flow of current from the battery and maintaining contiguous revolution of the motor itself during temporary stoppages of the vehicle, whereby the drain upon the battery is continuous and the power of the motor during said stoppages is accumulated in inertia utilizable at the next starting. 31st. In the propulsion of vehicles and the like by electric motors actuated by batteries, the method of changing the speed of the vehicle while causing the least possible deterioration of the battery, which consists in maintaining the flow of the current from the battery and maintaining, as nearly as practicable, a constant rate of revolution for the motor and varying the ratio of transmission between the motor shaft and the driving shaft to correspond to the speed desired, substantially as described. 32nd. In the propulsion of vehicles and the like by electric motors actuated by batteries, the method of obtaining the maximum effect from the motor in starting while causing the least possible deterioration of the battery, which consists in first causing the motor to revolve disconnected from the driving shaft of the vehicle, and then effecting a power transmitting connection between the revolving motor shaft and the driving shaft, substantially as described. 33rd. In the propulsion of vehicles and the like by electric motors actuated by batteries, the method of obtaining the maximum effect from the motor in starting while causing the least possible deterioration of the battery, which consists in first causing the motor to revolve disconnected from the driving shaft of the vehicle, then effecting a power transmitting connection between the revolving motor shaft and the driving shaft, and gradually obtaining the speed of locomotion desired by gradually increasing the ratio of transmission between the motor shaft and the driving shaft, substantially as described.

No. 39,311. Fifth Wheel for Wagons.

(Rond d'avant-train de wagon.)

Abner B. Bishop, Medina, Ohio, U.S.A., 13th July, 1892; 6 years.

Claim.—1st. The combination of a wagon axle, a fifth wheel having a grooved upper plate mounted thereon, a reach passing beneath