P. MARSHALL, C. C. METCALFE & W. KNOWLES.

RAILWAY AND VEHICULAR DEVICE FOR PURPOSES OF AMUSEMENT.

APPLICATION FILED MAR. 14, 1908.

910,702. Patented Jan. 26, 1909.

4 SHEETS—SHEET 1.

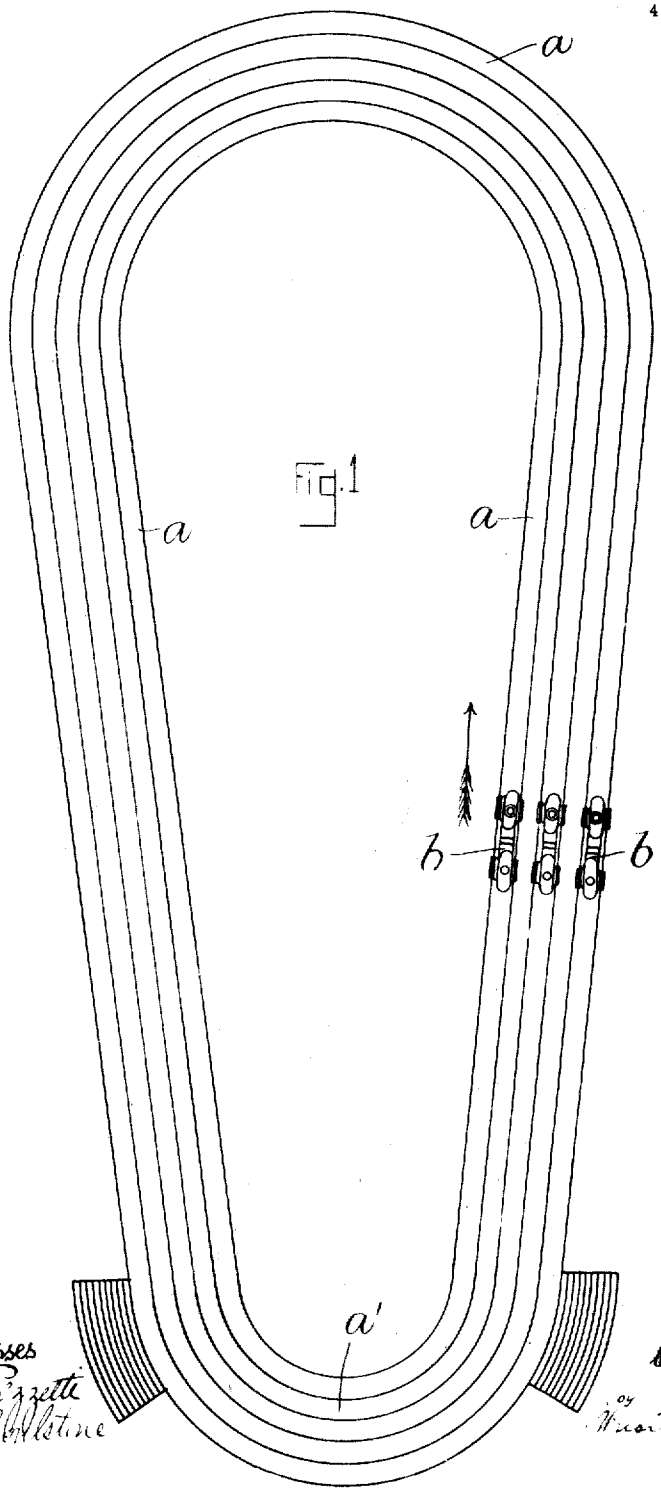

Fig. 1

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4 SHEETS-SHEET 2

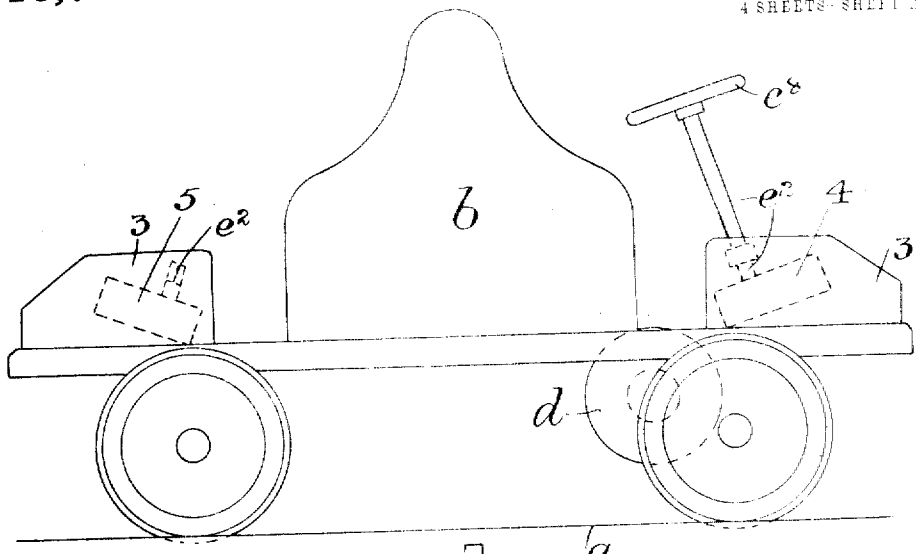

Fig. 2

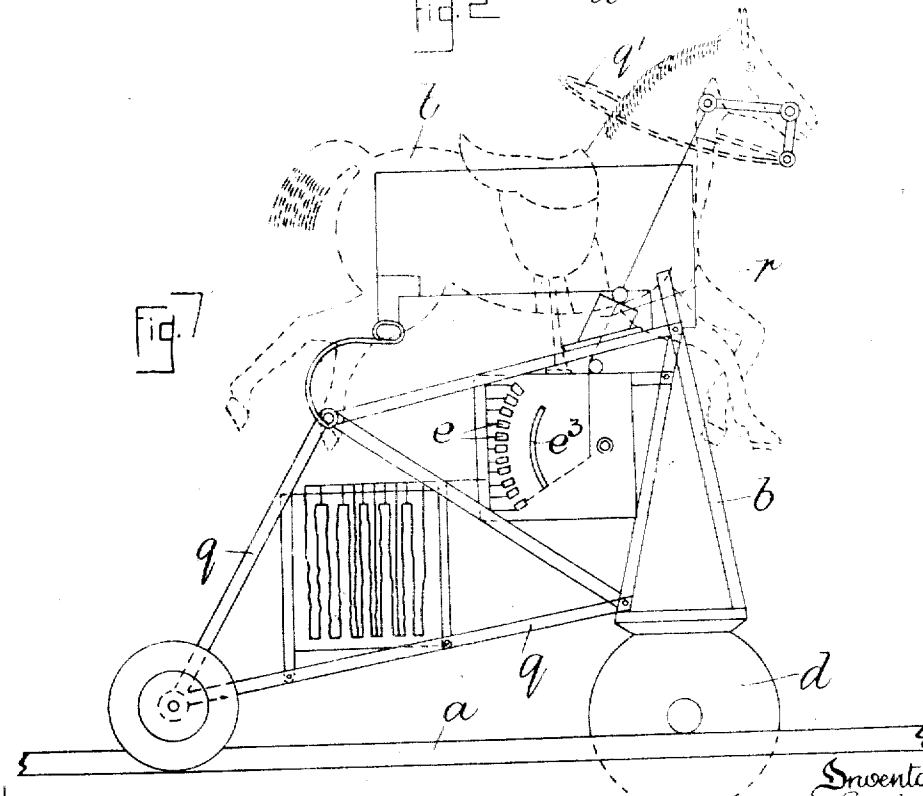

Fig. 7

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4 SHEETS—SHEET 3.

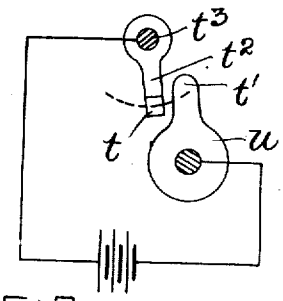

Fig. 9

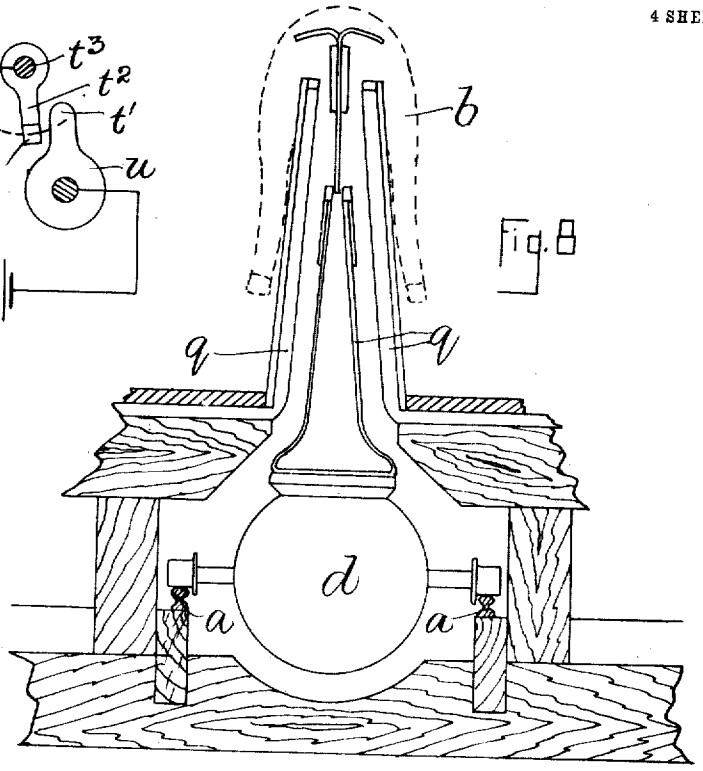

Fig. 8

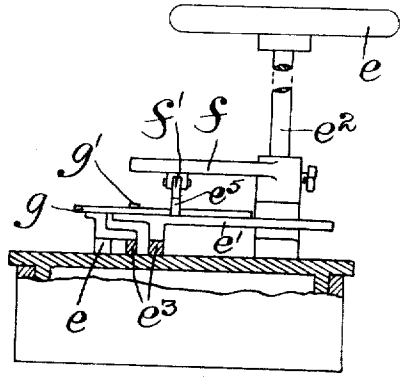

Fig. 3

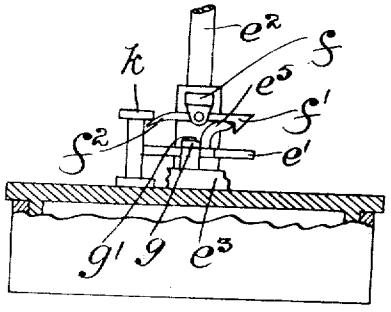

Fig. 4

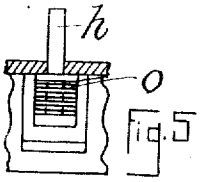

Fig. 5

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910,702.

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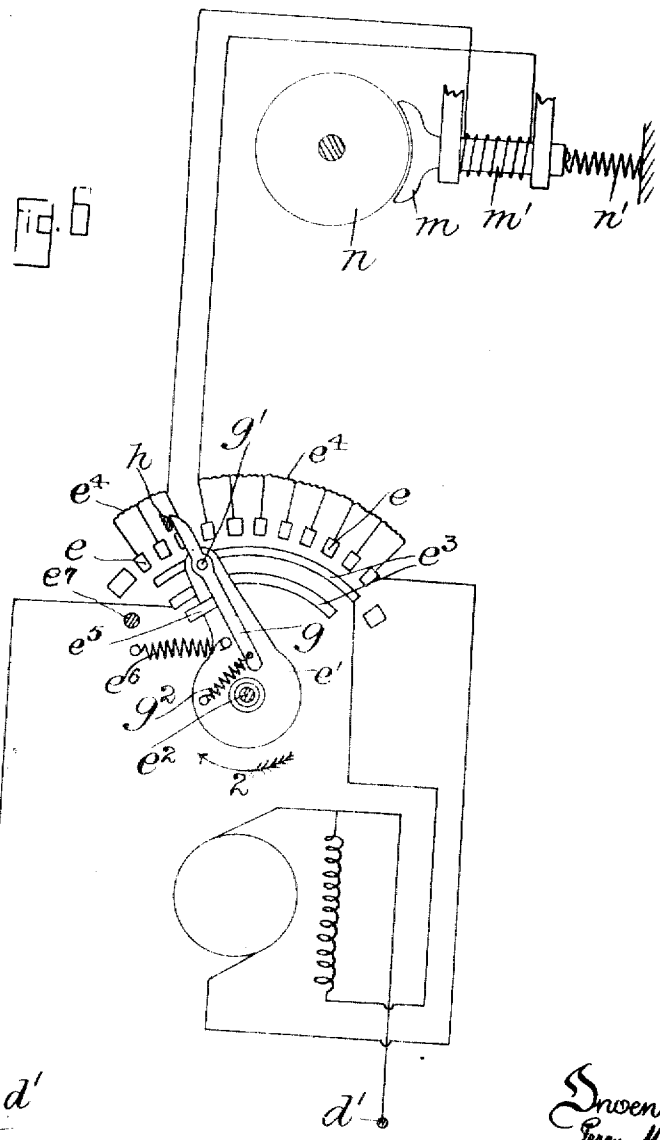
4 SHEETS—SHEET 4.

Fig. 6



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UNITED STATES PATENT OFFICE.

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RAILWAY AND VEHICULAR DEVICE FOR PURPOSES OF AMUSEMENT.

No. 910,702. Specification of Letters Patent. Patented Jan. 26, 1909.

Application filed March 14, 1908. Serial No. 421,151.

To all whom it may concern:

Be it known that we, PERCY MARSHALL, CHARLES CARTWRIGHT METCALFE, and WALTER KNOWLES, subjects of the King of Great Britain, and residing, respectively, at 4 Balmoral road, South Shore, Blackpool, in the county of Lancaster, England; 5 Urban road, Sale, in the county of Cheshire, England, and 17 Queensgate, Bolton, in the county of Lancaster, England, have invented certain new and useful Improvements in Railway and Vehicular Devices for Purposes of Amusement, of which the following description, in connection with the accompanying sheets of drawings, is a specification.

Our invention relates to an arrangement of a system of rails or tracks together with vehicles which may take an equestrian form or that of velocipedes, motor cars or the like, the movements of which may be controlled by the user, and our said invention consists in so arranging the means to be operated by the user for controlling the rate of speed of said vehicles through regulating or governing the motor driving same, that when a predetermined position of the regulator is reached or exceeded at which time the speed of said vehicles will be greatest, the motions of such vehicles may either be retarded or almost or entirely arrested.

In the accompanying sheets of drawings, which are illustrative of our said invention:—Figure 1 is a diagram illustrating in plan a railway upon which are shown in position three motor cars. Fig. 2 is side elevation showing one of the cars with the switch operating device in position thereon, such car being electrically driven. Fig. 3 is part sectional side elevation, drawn to an enlarged scale as compared with Fig. 2, of said switch and its operating parts. Fig. 4 is part sectional elevation thereof as seen at right angles to Fig. 3. Fig. 5 is a drawing in detail of parts hereinafter referred to. Fig. 6 is a diagram showing the switch and its connections. Fig. 7 is side elevation of a vehicle of equestrian form, the framework of which is shown in full lines and the equestrian part indicated by dotted lines. Fig. 8 is sectional end elevation of parts illustrated by Fig. 7. Fig. 9 is a diagram showing the application of our improved speed regulating devices to another form of motor mechanism.

Similar letters and figures of reference indicate like parts throughout the several views.

In carrying our invention into effect, we arrange a system or systems or sets of rails or tracks a parallel with each other as shown by Fig. 1, and these rails may be arranged to follow straight, curved or other desired courses as may be found advantageous. Upon these rails a we mount our vehicles b of the character desired so that each vehicle may carry its respective motor whether same is to be actuated electrically or by steam, or by internal combustion or explosive engines, each one of these vehicles being arranged to have appropriate devices whereby the user can gradually move or operate mechanism so as to increase the speed thereof until a predetermined limit is reached when said mechanism will at this delicate point so act independently of the operator as to more or less gradually diminish the speed or even entirely stop off all the energy exerted by the motor, thus requiring skill or good fortune on the part of the user not to unduly press forward his vehicle otherwise his progress will be retarded instead of accelerated.

When electrical energy is employed, as is the case in the arrangements illustrated by Figs. 1 to 8 of the accompanying drawings, the rails a may be arranged to conduct current to the motor d on the driving shaft of the vehicle, or cables d' (see Fig. 6) may be laid in suitable proximity thereto and the current taken therefrom by any of the well known forms of collectors. In the electrical circuit and at an appropriate position on the vehicle b we arrange switch devices consisting of the contact pieces e and quadrants e^2 over which are mounted to travel the switch levers e' and g the latter being pivotally mounted at g' upon the former which swivels loosely on the shaft e upon which is fixed the hand wheel e^3. Fixed upon the shaft e^3 is the lever f carrying the catch piece f' arranged to lay hold of the piece e^5 fixed to the lever e' so that as the hand wheel e^3 is rotated in the direction indicated by the arrow 2 the catch f' will carry the lever e' as well as the lever g along with it in the same direction so as to successively throw out of circuit the resistance coils e^4. After reaching the last contact piece e on moving further (as the user may imagine to increase his rate of speed since eli

these parts are hid from his view by the cover 3) the front and inclined end f^2 of the catch f' comes into contact with the fixed projection k so as to be thereby deflected to release its hold of the lever e' thus the retracting spring e^6 (or a dashpot) is permitted to return said lever e' to its position shown by Fig. 6. On thus returning, the levers e' and g are arrested in said position by the stop-piece h which is the armature of an electro-magnet or other appropriate device as shown by Fig. 5, and in this position the current is so reduced as to be able only to carry the vehicle b at a comparatively slow rate of speed, to increase which the user has to return his hand wheel e to again enable the catch f' to lay-hold-of and carry with it the levers e and g as said user again commences to move his hand wheel in the direction of the arrow 2. When the current is entirely shut off then the armature h descends out of the path of the lever g and allows same and the lever e' to be returned by the spring e^6 so that the said lever e' rests against its stop-pin e^7. On the current being turned on, the user on moving the handle e^8 as above described brings the levers e' and g forward until the inclined end of the lever g comes into contact with the armature h which such current will have raised into its path. However by the continued movement of the hand wheel e^8 said lever g is made to swivel upon its pivot g' and against the recoil of its spring g^2 until its deflection enables it to pass such armature h on which its spring g^2 will retract it into its normal position shown by Fig. 6. To further embarrass the user when the arm e' is released by the projecting part k we arrange in the electrical circuit, an electrically operated brake m so that when current is passed through the coil m' thereon said brake m may be pressed against the tire of one of the vehicle wheels n and the motion of said vehicle be thereby retarded, a retracting spring n' being used to retain the brake n in its normal position.

The hand wheel and the upper part of the shaft e^2 are removable so as to be interchangeable from one switch device 4 to the other 5 on the motor car, a square or other shaped projection or socket being formed at the lower end of the rod to fit over or within a correspondingly shaped projection or socket on or in the lower end of the removable part of the shaft e^2. Or if desired one switch device may be employed and mounted centrally in the car, shafts and gearing or chain devices connecting the rod for operating the switch with those e^2 at the ends of the car.

When vehicles of equestrian shape are employed the equestrian portion is mounted upon suitable framework c as shown by Figs. 7 and 8 and in this device the lever arm f and the switch arm e' are preferably operated by the parts g' representing the guiding reins and in this case as well as in the other arrangement of devices suitable dash-pots as that marked r in Fig. 7 are employed for the purposes well understood.

We preferably arrange a portion of the rails or track (as that marked a', Fig. 1) without conductors so that the current cannot be collected by any of the riders or users until a certain point is reached, and when they have finished their course the current is shut off.

On the users taking possession of the vehicles these are situated on the part of the track which is or may be dead to the electric current, such as the part marked a' of Fig. 1. The attendant then pushes the vehicle until the live part of the track is reached or the attendant may actuate a switch which will energize said otherwise dead part of the track in order to carry said vehicle on to said live part on which the user may then commence to turn his hand wheel e as above described. As he moves from zero against the stop-pin e^7 current is gradually increased until the maximum is reached with the disconcerting results above described. Instead of using such "dead" part of the track another switch may be employed so that the attendant may switch the current "on" or "off" from the track as and whenever desired.

In case steam is the active power employed then the admission of steam to the engine may be controlled through adjusting devices which when drawn too far will release spring or other actuated mechanism to diminish or entirely cut off the admission of steam.

Where oil or explosive engines are employed the controlling mechanism may be arranged to advance or otherwise control the time of firing of the explosive mixture or to operate any other suitable device so that the desired element of skill or chance in its manipulation is brought about. Thus in Fig. 9 we have illustrated a device for altering or controlling the time of firing. The contact t with which the brush or contact t' on the rotary holder u makes contact is carried by the lever t^2 which corresponds with the lever g in the arrangement above described, and is operated by the arm f (mounted on the rod t^3) and liberated and held as desired exactly in the same manner as is hereinbefore described.

It will readily be understood that the arrangement of switch devices as above described may be to some extent modified without departing from the nature of our invention provided that the desired element of skill or chance is brought into action.

Such being the nature and object of our said invention, what we claim is:—

1. In apparatus of the class described, tracks, a vehicle, motor devices on said vehicle, an operating device to be actuated by the user of the vehicle to control the motor thereon, switch devices intervening between said operating device and the motor, catch and lever parts for actuating said switch, devices

for disengaging said catch when a predetermined position has been reached, and means whereby the parts disengaged may be retracted to arrest or retard the motion of the vehicle substantially as herein specified.

2. In apparatus of the class described, a vehicle constructed to move over a track, said track, switch devices carried by said vehicle, operating devices whereby the user may actuate the switch, motor mechanism on said vehicle, means whereby said switch devices are coupled to so as to control the motions of the motor, devices for arresting the movable parts of the switch so that the motion of the motor is not entirely arrested but only retarded and devices whereby the user is prevented from exceeding a predetermined rate of speed substantially as herein set forth.

3. In apparatus of the class described, a vehicle, an electric motor on said vehicle, a cable for conducting electric current to said motor, switch devices mounted on the vehicle and situated in the circuit of said electric current, means whereby the user may actuate said switch device, and automatically actuated means whereby the switch device is disconnected from the parts actuated by the user on a predetermined position being reached to arrest or retard the motion of the vehicle substantially as herein specified.

4. In apparatus of the class described, a vehicle, an electric motor mounted on said vehicle, a cable for supplying electric current to said motor, switch devices mounted on said vehicle and situated in the circuit of said electric current, means whereby the user may actuate said switch device and carry same to a position where it is automatically disengaged from the control of said user, and means whereby the parts on being disengaged are retracted or caused to move in a direction contrary to that in which the user was moving them substantially as herein set forth.

5. In apparatus of the class described, a vehicle, an electric motor mounted upon said vehicle, a cable for supplying electric current to said motor, switch devices mounted on the vehicle and in the circuit of said electric current, devices whereby the switch device may be actuated by the user, means whereby the user is prevented from advancing the switch device beyond a predetermined position retracting means for causing the switch parts to return and means whereby said parts are arrested before all the current is shut off substantially as herein specified.

6. In apparatus of the class described, a vehicle an electric motor mounted on said vehicle, a cable for supplying electric current to said motor, switch devices under the control of the user, means whereby said switch devices are removed from said control of the user, means whereby said user is prevented from seeing or knowing the exact position or part of the switch where his control is cut off, and means whereby the return of the switch is arrested in a position to supply current to move the vehicle at its reduced speed substantially as herein specified.

7. In apparatus of the class described, a vehicle an electric motor mounted on said vehicle, a cable for supplying electric current to said motor, switch devices arranged to be under the control of the user, means for automatically removing said switch devices from under the control of the user, means for arresting the return of the parts when thus removed in a position so that only sufficient current is then supplied to the motor to carry the vehicle at a comparatively slow rate of speed, and means whereby the parts thus arresting the switch may be removed so that same will return to shut off all the current substantially as herein specified.

8. In apparatus of the class described, a vehicle an electric motor mounted on said vehicle, a cable for supplying current to said motor, switch devices arranged to be under the control of the user, means for automatically removing said devices from under the control of the user, means for returning same to a position to supply a reduced current to the motor, and brake mechanism mounted in position to be brought into action on the switch being returned to this position of supplying less current to the motor substantially as herein set forth.

9. In apparatus of the class described, a vehicle an electric motor mounted on said vehicle, a cable for supplying current to said motor, switch devices mounted on each end said vehicle, operating mechanism whereby the user may actuate said switch device, connecting parts from said operating mechanism so that when the user takes his seat at either end of the vehicle the operating mechanism may be removed from the other and mounted on such end substantially as and for the purposes specified.

In testimony whereof we have hereunto affixed our signatures in presence of two witnesses.

PERCY MARSHALL.
CHARLES CARTWRIGHT METCALFE.
WALTER KNOWLES.

Witnesses:
JOHN WHITEHEAD,
SAMUEL HEY.