No. 681,769. Patented Sept. 3, 1901.

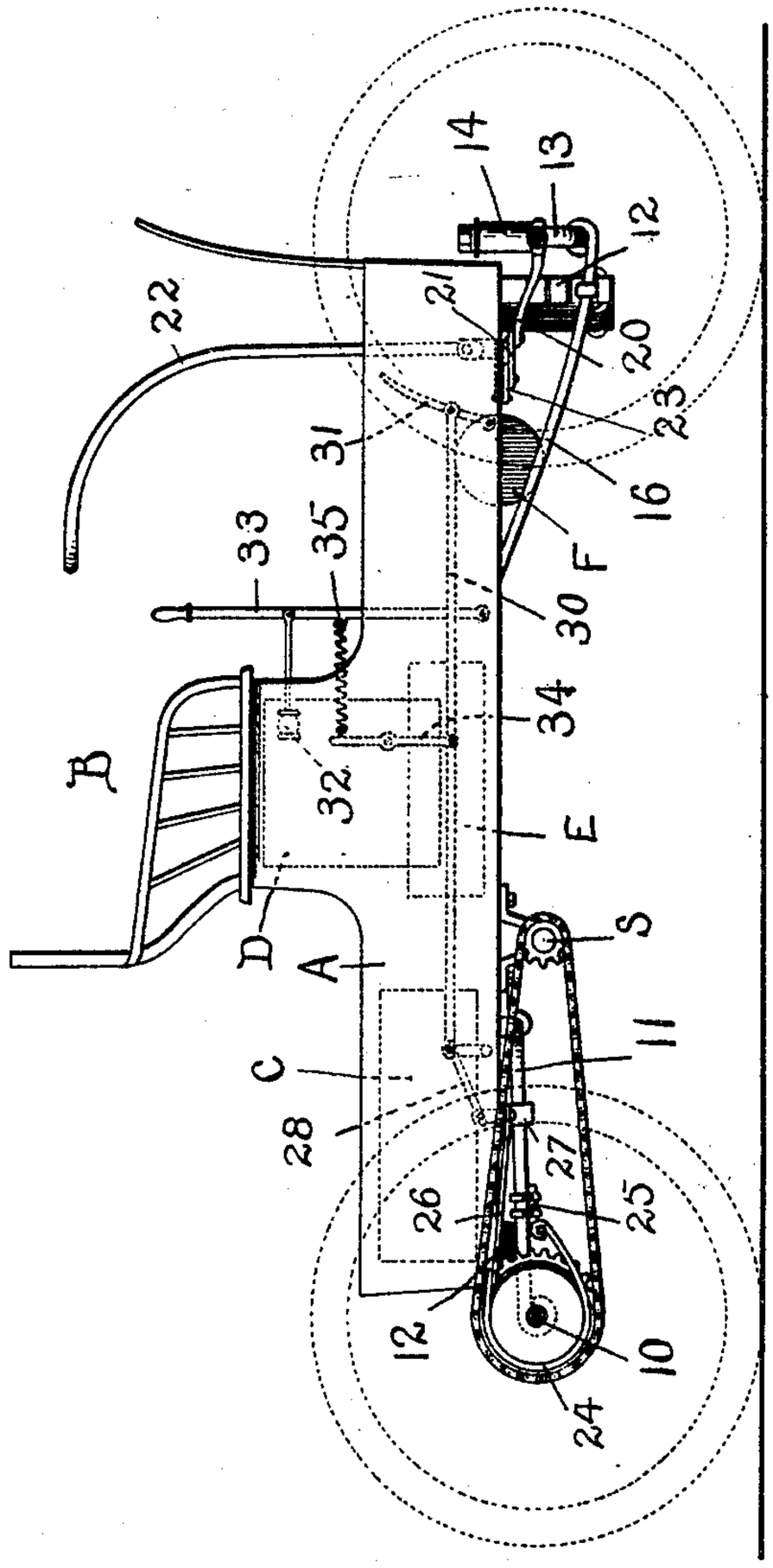
J. C. WOOD.

MOTOR VEHICLE.

(Application filed Dec. 7, 1899.)

(No Model.) 3 Sheets—Sheet 1.

FIG. 1.



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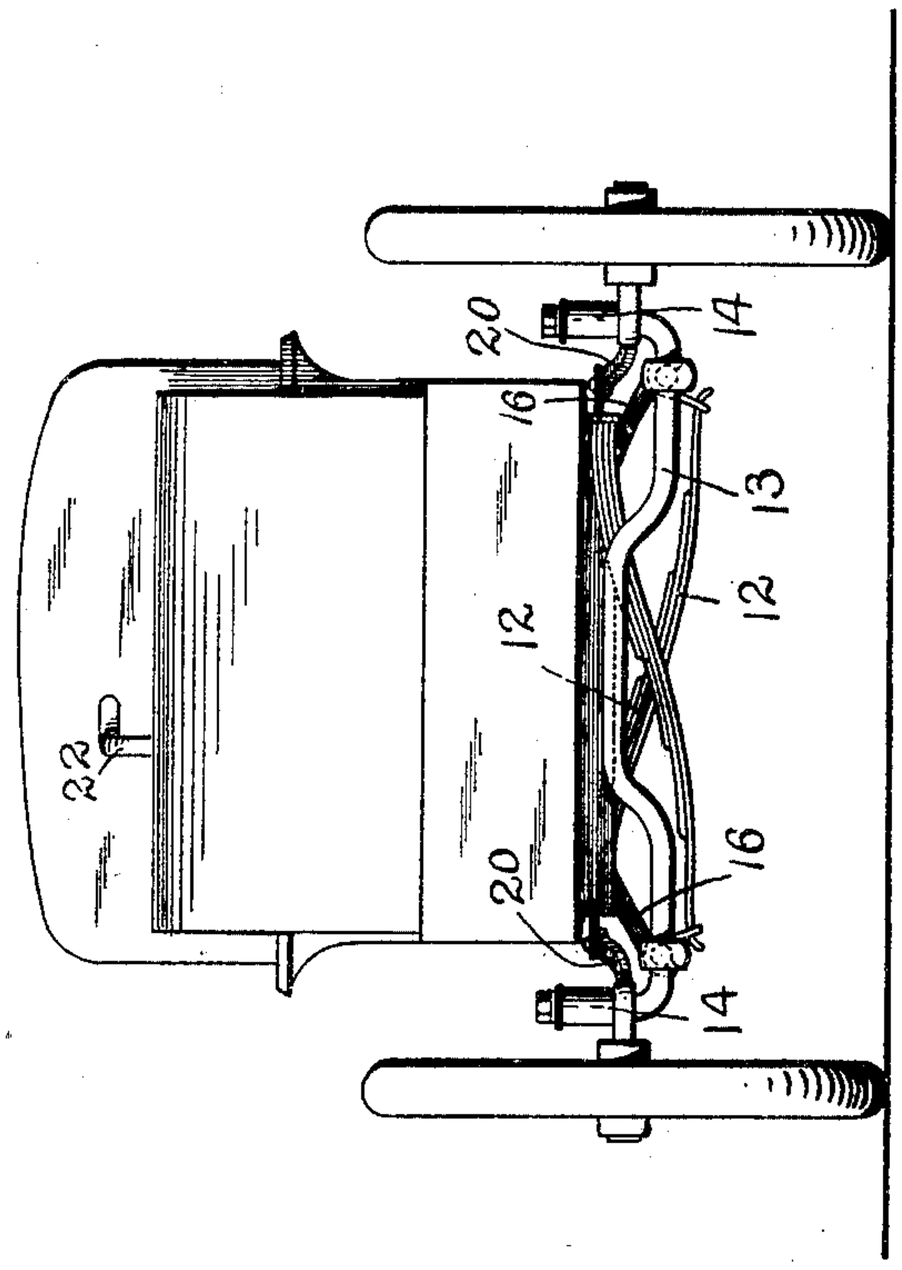
(No Model.) 3 Sheets—Sheet 2.

Fig. 2.



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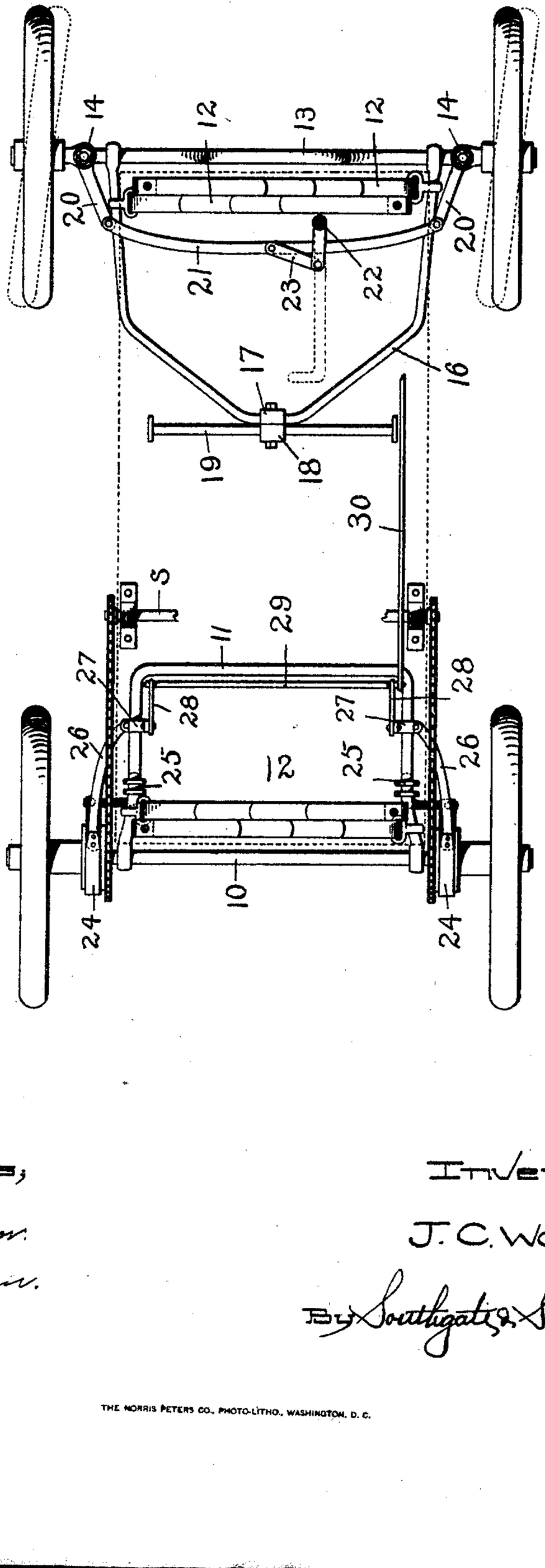
(No Model.) 3 Sheets—Sheet 3.

FIG. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH C. WOOD, OF WORCESTER, MASSACHUSETTS.

MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 681,769, dated September 3, 1901.

Application filed December 7, 1899. Serial No. 739,511. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. WOOD, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Motor-Vehicle, of which the following is a specification.

This invention relates to that class of motor-vehicles in which the driving-power is applied to the rear wheels or to the rear axle; and the object of this invention is to provide a simple, efficient, and durable running-gear which will support the carriage-body at a comparatively low elevation, the construction being such that the front and rear axles may extend at different angles with respect to each other, but will always be maintained in parallel vertical planes.

A further object of this invention is to combine the running-gear of the motor-carriage with a brake mechanism which is connected with the motor-controlling handle in such a way as to shut off the power from the motor upon the application of the brake, but at the same time to permit the application of power to the motor while the brakes are maintained set, when so desired.

To this end this invention consists of the parts and combinations of parts, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying three sheets of drawings, Figure 1 is a side view of a motor-carriage constructed according to this invention. Fig. 2 is a front view thereof, and Fig. 3 is a plan view illustrating the running-gear with the body portion of the carriage removed.

In constructing the running-gears which have heretofore been employed in that class of motor-carriages to which the power is applied to the rear wheels or to the rear axle it has heretofore ordinarily been customary to provide various forms either of rigid or jointed frames for connecting the front and rear axles of the carriage and to support the bodies of the carriages upon the running-gear as thus constructed by carriage-springs of different forms. In motor-carriages as thus constructed the bodies of the carriages are necessarily supported at comparatively high elevations, and many of the running-gears which have heretofore been employed have been found in practice not to possess that degree of flexibility which will permit the carriage to run over uneven roads without straining the running-gear to an undesirable extent.

One especial object of this present invention is therefore to provide a running-gear for motor-carriages which will permit the carriage-body to be supported at a low elevation and which will provide sufficient flexibility, so that the carriage may be run over uneven roads without straining the running-gear or imparting undue vibrations to the carriage-body. To accomplish this object, I preferably dispense with the side bars or frameworks which have heretofore usually been employed for connecting the front and rear axles and provide for independently connecting the front and rear axles to the body portion of the carriages in such a manner as to support the carriage-body at a low elevation and at the same time provide efficient spring connections for preventing vibrations or jars being imparted to the carriage-body. To this end the running-gear of a motor-carriage constructed according to this invention comprises a rear axle, a frame extending forward from the rear axle and hinged to the carriage-body, a front axle, and a frame extending back from the front axle and journaled in a piece or frame connected to the body to turn on a central horizontal pivot, whereby the axles may extend at different angles with respect to each other, but will always be maintained in parallel vertical planes.

Referring to the accompanying drawings and in detail, A designates a carriage-body of substantially the ordinary construction having a seat B. The rear axle 10 is preferably rigid or non-rotative, and extending forward from the rear axle 10 is an axle-frame 11, which is hinged, preferably, to the under side of the carriage-body A. Interposed between the carriage-body and the rear axle or its axle-frame are plate-springs 12. Each of the plate-springs 12 is connected at its upper end to one side of the carriage-body and extends crosswise of the carriage-body and is connected at its lower or opposite end either to the rear axle 10 or to its axle-frame 11. The front axle 13 is provided with a rearwardly-extending axle-frame 16, which is

hinged in a piece or plate 17, which piece or plate 17 is pivotally connected to a block 18, secured on a cross-bar 19 of the carriage-body A. The arrangement of springs at the front is substantially the same as at the rear of the carriage, comprising plate-springs 12, each of which is connected at its upper end to one side of the carriage-body and extends crosswise of the carriage-body, being connected at its lower opposite end to the axle-frame 16. By means of this construction the carriage-body A itself forms the connection between the front and rear axles of the carriage, and by hinging the rear-axle frame to the carriage-body and by connecting the front-axle frame to the carriage-body by a combined pivotal and hinged joint and by interposing springs between the carriage-body and the axles the carriage-body will be flexibly supported at a comparatively low elevation and in passing over uneven ground the axles will be kept in parallel planes; but the front axle will be permitted to pivot or turn about its combined pivotal and hinged joint, avoiding all twisting, strains, or torsions on the running-gear. At its ends the front axle is preferably bent up, and pivoted on the ends of the front axles are pieces 14, and journaled on arms or studs extending therefrom are the front wheels.

The steering connections are most clearly illustrated in Fig. 3. As shown in this figure, arms 20 extend rearwardly from the pieces 14, and are connected by a cross rod or bar 21. A steering-handle 22 is journaled in the body of the carriage, and a link 23 connects an arm extending rearwardly from the steering-handle with the cross rod or bar 21. The link 23 is jointed with sufficient looseness to allow for the play or vibration of the carriage-body without imparting undue vibration to the steering-handle.

In using motor-carriages it is extremely desirable that the operator should be required to manipulate as few separate handles or instrumentalities as possible. This is especially true in emergencies, when it is necessary that a motor-carriage should be promptly stopped or brought to rest. In ordinary forms of motor-carriages which are now employed to stop the motor-carriage in an emergency or upon downgrades the operator first operates a motor-controlling element (such as a throttle-valve or other device) to shut off the power from the motor, and then by a separate operation applies the brakes. During these operations the operator must keep control of the steering-handle to keep the carriage headed in the desired direction. To simplify the work of stopping a motor-carriage and especially to avoid the possibility of accident where it is necessary to bring a motor-carriage promptly to a stop, I have combined the brake mechanism of a motor-carriage constructed according to this invention with a motor-controlling element—*i. e.*, a throttle-valve or other device—so that whenever the brakes are applied the power will be shut off from the motor. Now it is sometimes desirable, for example, in running into a stable at a slight downgrade or in other locations to be able to apply power to the motor and at the same time to keep the brakes set. To accomplish this result, the brake-operating connections are connected to the motor-controlling element by a yielding connection or spring, so that while the brakes are kept set—for example, by a foot-lever—the throttle-valve or other motor-controlling element may still be open to apply power to the motor.

Referring to the brake connections, as illustrated most clearly in Figs. 1 and 3, 24 designates the brake shoes or straps which partially surround and coöperate with the brake-disks turning with the rear wheels, which rear wheels are journaled on the rear axle 10. The lower ends of the brake shoes or straps 24 are secured to an arm extending from a bracket 25, fastened to the rear-axle frame 11. The upper ends of the brake-straps 24 are connected by links 26 to slides 27, movably mounted on the axle-frame 11. The slides 27 are connected by links 28 to arms extending up from a rock-shaft 29. Connected to operate the rock-shaft 29 is a link 30, connected at its front end to a foot-lever 31. The link 30 is connected near its center to operate a lever 34, having its upper end connected by a spring 35 to the controlling-lever 33, which controls the throttle-valve 32 or other desired form of motor-controlling element. By means of these connections whenever the foot-lever 31 is operated to apply the brakes power will be simultaneously shut off from the motor of the carriage, and at the same time, if it is desired to apply power to the motor while the brakes remain set, the controlling-lever 33 may be pushed forward against the tension of its spring 35.

The details and arrangement of the driving connections of the motor and means for supplying power thereto in a motor-carriage constructed according to this invention can be widely varied. As herein illustrated, however, the power is preferably furnished by an engine which is supplied with steam from a boiler heated by a gasolene-burner.

As indicated by dotted lines in Fig. 1, C designates the water-tank for supplying water to the boiler D.

E designates the engine, which is connected in any ordinary manner to drive a cross-shaft S, connected by sprocket-chains to drive the rear wheels journaled on the axle 10. An oil-tank F for supplying oil to heat the boiler is located near the forward part of the carriage. It is to be understood, however, that the arrangement and character of the motor, the means of supplying power thereto, and the connections from the motor to the running-gear of the vehicle form no part of the present invention.

I am aware that numerous changes may be

made in the relative proportion and arrangement of parts of the running-gear and the brake mechanism therefor without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the form herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a vehicle, the combination of the body, a rear axle, a frame extending forward from the rear axle and hinged to the body, a front axle, a frame extending back from the front axle and journaled in a piece or frame connected to the body to turn on a central horizontal pivot, whereby the axles may extend at different angles with each other, but will be maintained in parallel vertical planes, and plate-springs interposed between the body and axles, each of said springs having its upper end connected to the carriage-body substantially at one side thereof, and extending transversely across substantially to the other side of the vehicle, substantially as described.

2. In a vehicle, the combination of the body, a rear axle, a frame extending forward from the rear axle and hinged to the body, a front axle, a frame extending back from the front axle and journaled in a piece or frame connected to the body to turn on a central horizontal pivot, whereby the axles may extend at different angles with respect to each other, but will be maintained in parallel vertical planes, and two similar sets of springs, one at the front, and one at the rear of the vehicle, each set of springs consisting of two crossing plate-springs having their upper ends secured to opposite sides of the body, and their lower ends connected to the axle-frames, substantially as described.

3. In a motor-carriage, the combination of the running-gear, a brake therefor, and a yielding connection for normally shutting off power from the motor upon the application of the brake but permitting the starting of the motor while the brake still remains set, when so desired, substantially as described.

4. In a motor-carriage, the combination of the running-gear, a brake therefor, foot-controlled connections for applying the brake, a lever for starting and stopping the motor, and a yielding connection for normally stopping the motor upon the application of the brake but arranged to permit the lever to be operated to start the motor while the brake still remains set, when so desired, substantially as described.

5. In a motor-carriage, the combination of the running-gear, brake-shoes for the rear wheels thereof, a rock-shaft connected to simultaneously operate said brake-shoes, a foot-lever at the front of the carriage, a link connecting the foot-lever and rock-shaft, a lever for starting and stopping the motor, and a yielding connection between the link and the starting and stopping lever arranged to normally stop the motor upon the application of the brakes but permitting the motor to be started while the brakes remain set when so desired, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH C. WOOD.

Witnesses:
LOUIS W. SOUTHGATE,
PHILIP W. SOUTHGATE.