No. 819,302. PATENTED MAY 1, 1906.

G. D. MUNSING.

WHEEL MOUNT FOR VEHICLES.

APPLICATION FILED SEPT. 22, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

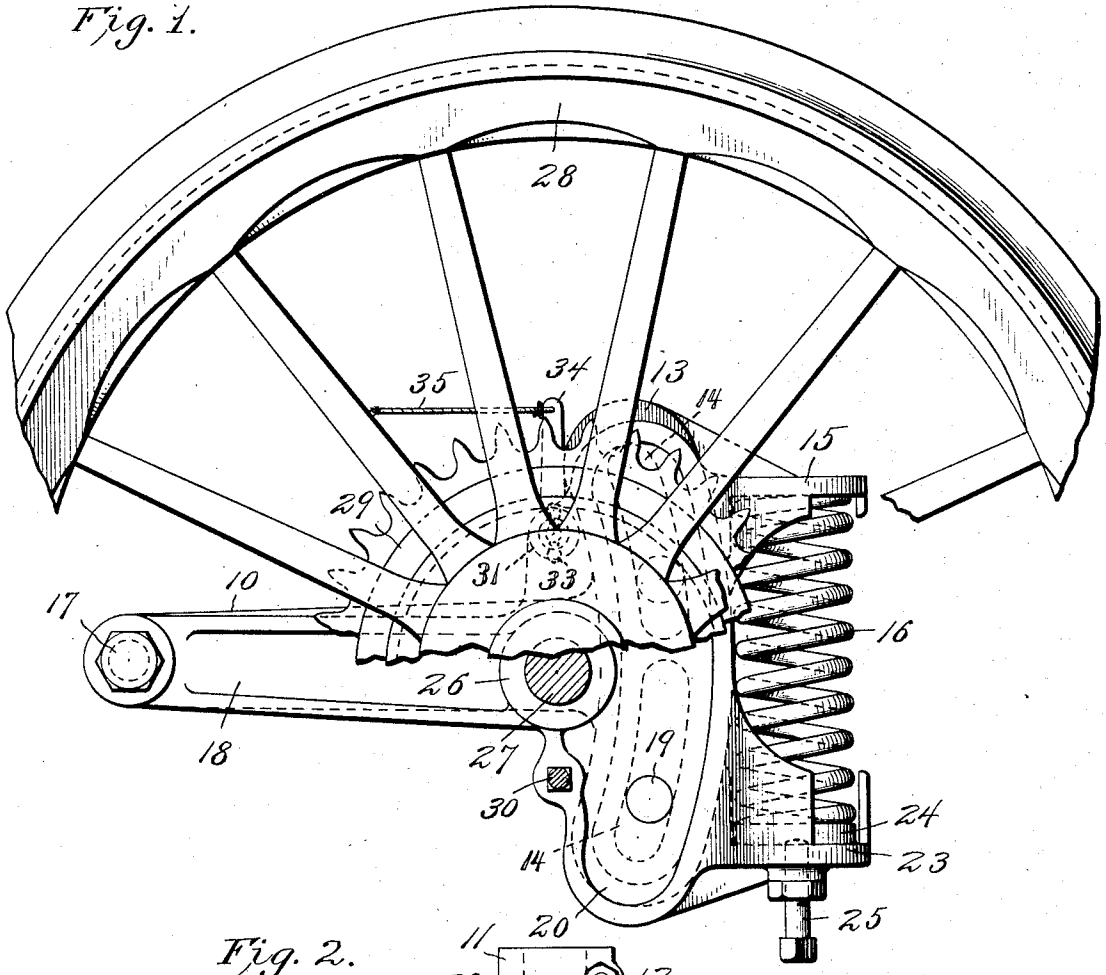
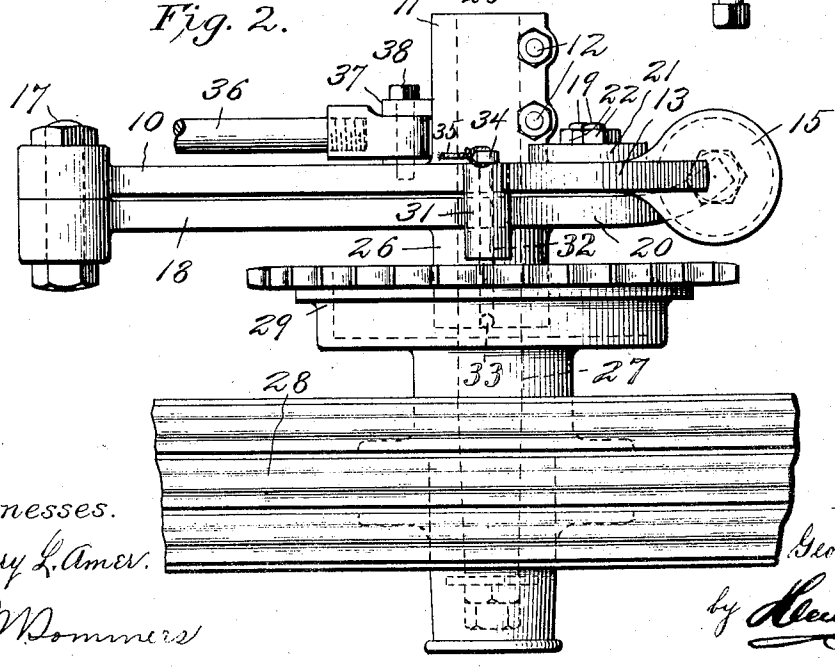


Fig. 2.



Witnesses.
Harry L. Amer.
[illegible]

Inventor.
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3 SHEETS—SHEET 2.

Fig. 3.

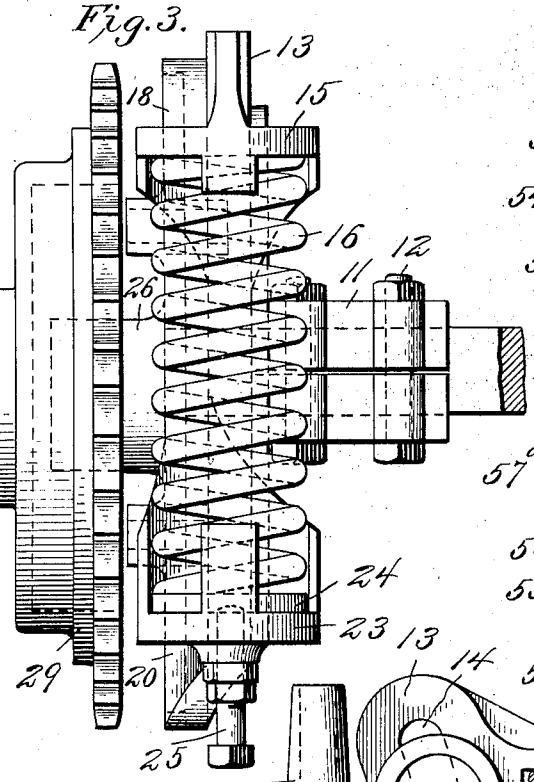


Fig. 4.

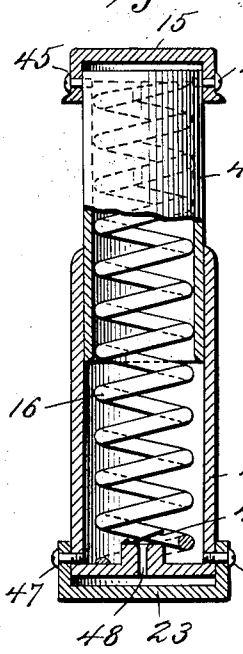


Fig. 5.

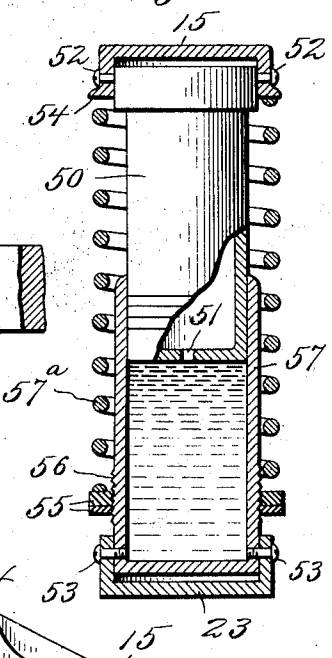


Fig. 6.

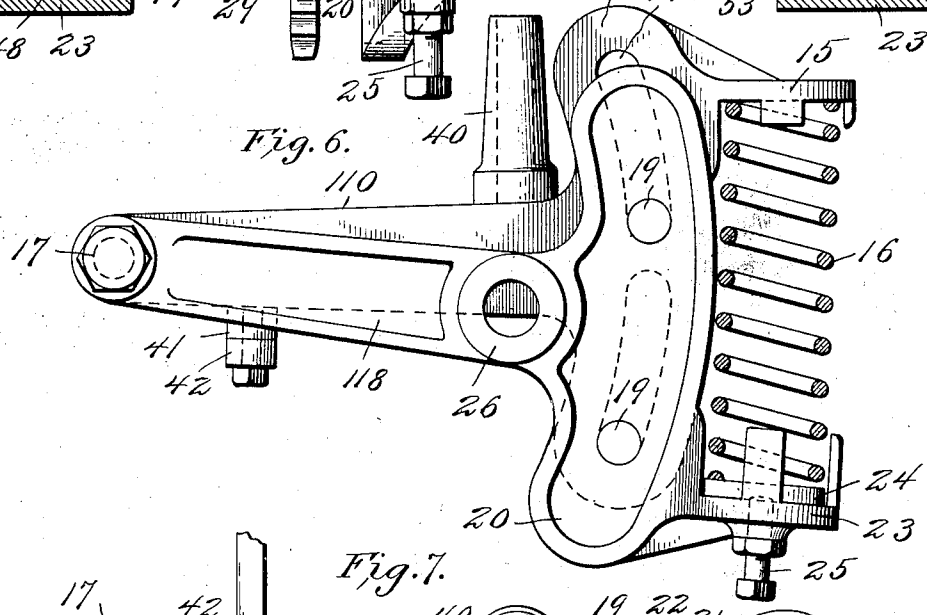
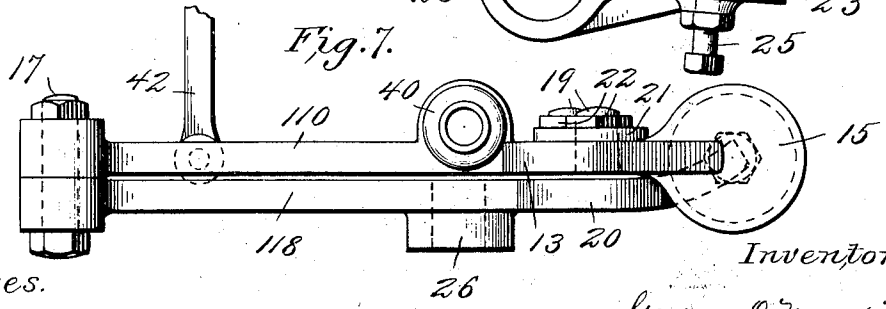


Fig. 7.



Witnesses.

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3 SHEETS—SHEET 3.

Fig. 8.

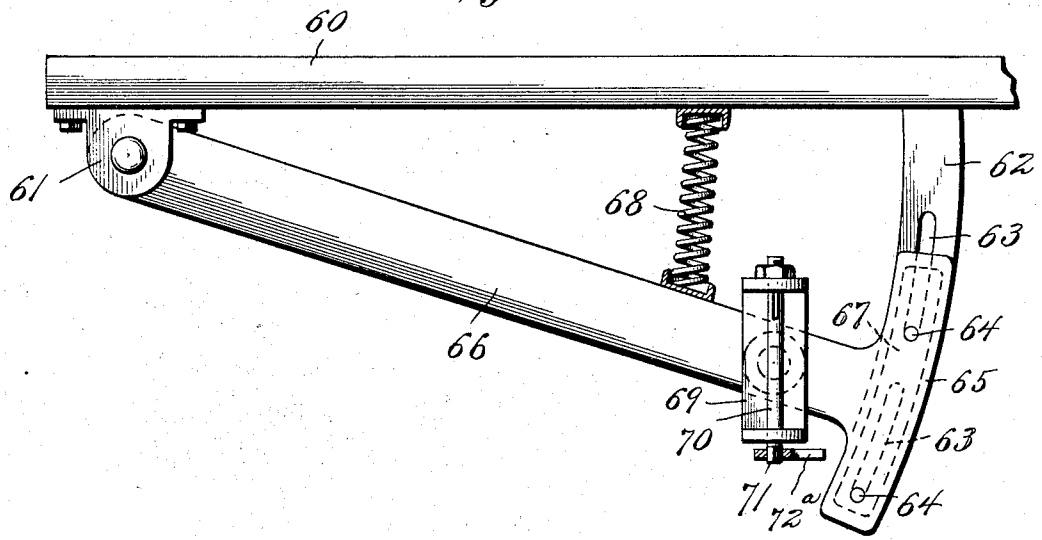
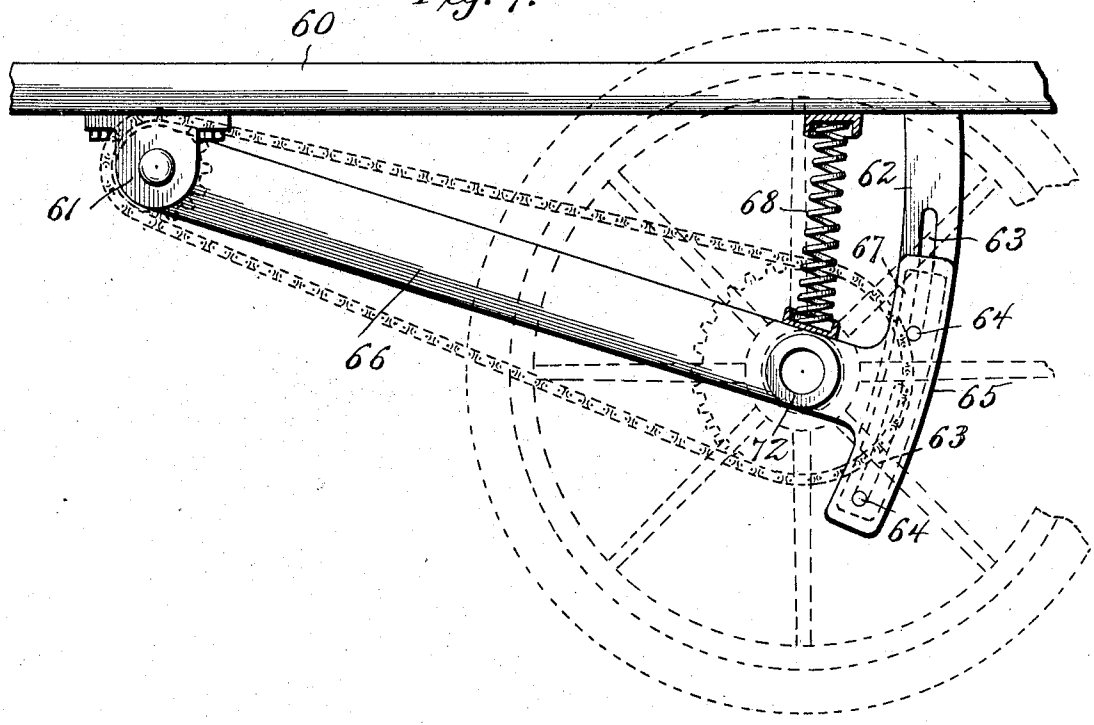


Fig. 9.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE D. MUNSING, OF NEW YORK, N. Y.

WHEEL-MOUNT FOR VEHICLES.

No. 819,302. Specification of Letters Patent. Patented May 1, 1906.

Application filed September 22, 1905. Serial No. 279,660.

To all whom it may concern:

Be it known that I, GEORGE D. MUNSING, a citizen of the United States of America, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Wheel-Mounts for Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

My invention relates to wheel-mounts for vehicles, and more especially for motor-vehicles, to permit each wheel of the vehicle to have separate and independent vertical movement, said movement being cushioned and frictionally retarded, and to details of construction hereinafter particularly described and claimed.

Referring to the drawings, in which like parts are similarly designated, Figure 1 is an elevation embodying one form of my invention shown applied to the driving-wheel of an automobile. Fig. 2 is a plan view of the same, and Fig. 3 is an end view. Fig. 4 is a modification of the cushioning device. Fig. 5 shows another form of cushioning device. Fig. 6 illustrates the device, in elevation and partly in section, designed for a front or steering wheel. Fig. 7 is a plan of the same. Fig. 8 is a modification of a steering-wheel mount, and Fig. 9 is a view of a similar mount for a driven wheel.

Referring more particularly to Figs. 1, 2, and 3, the device is applicable to automobiles as now constructed by cutting off the wheel-axle spindle and clamping the device on the end of the axle, and said device consists of a rigid arm 10, on which is cast or otherwise secured a split clamping-sleeve 11, the sleeve being clamped tight by bolts 12 or otherwise secured on the square end of the cut axle, or the axle ends may be formed in or secured to this rigid arm in any desired manner. The arm is substantially T-shaped, the head 13 being arcuate and provided with, preferably, but not necessarily, two slots 14, struck from 17 as a center, and also provided at its upper part with a plate or case 15, in which the top of a coil-spring seats, and to the forward end of the arm is hinged or pivoted on a bolt 17 a similarly-shaped arm 18, whose head 20 carries two pins 19, preferably brazed into the head of arm 18, and which project entirely through the slots in the head 13 and are secured to a friction-plate 21 by nuts 22, so that when the swinging arm 18 moves on 17 as a pivot the plate 21 in frictional contact with the head 13 of the fixed arm will have like movement. The head 20 of the swinging arm 18 has a plate or pocket 23 on its lower end in vertical alinement with seat 15 when the axes of the two arms lie in the same plane to receive the lower end of the spring 16. In the seat 23 and under the lower end of the spring 16 is a plate 24, raised by a screw 25, so that within determined limits the tension of the spring may be increased at will. On the arm 18 and in alinement with the axle of the vehicle when the two arms 10 and 18 are together there is a boss 26, into which is shrunk the wheel-spindle 27. In the particular case illustrated this wheel is the driving-wheel 28 and has fixed to it the hollow sprocket-wheel 29. In the sprocket-wheel 29 is the customary expansion brake-band, which is a split ring fastened at its middle and having between its free ends an expanding-cam. In order to accommodate such a brake, the swinging arm 18 has a pin 30, on which the split ring is secured at its middle, and above this pin is a boss 31, in which is journaled a rod 32, that carries at the end which projects into the hollow sprocket the cam 33 to expand or move apart the free ends of the band, as is usually done. On the opposite end of rod 32 is the brake-actuating lever 34, connected by wire or cord 35 to the operating device at the driver's seat. When the tie-rod or body-brace 36 is secured to the hub end of the axle, the ears in which the rod is secured are cut off, and an ear 37 is provided on the boss 11, through which ear the bolt 38, which holds the end of the brace passes, being screwed into arm 10.

The operation is as follows: Each wheel of the vehicle when passing over an obstruction, such as a rut or stone in the road, will be forced upward and move in the arc of a circle

with 17 as center, the swinging arm 18 closing toward the stationary member 10 and at the same time compressing the spring 16; but this movement will not be permitted to take place too suddenly, nor will the spring after being suddenly compressed be permitted to rebound suddenly, by reason of the friction of plate 21 on the head 13 of the fixed arm, said plate being rigidly connected with the swinging member 18 20 by bolts 19. Such a device is applicable to all the wheels, whether driven or not.

Figs. 6 and 7 show my invention so constructed as to be applied to a movable or steering wheel. In this case the relatively fixed arm or member 110 has a vertical hollow post 40, through which the usual pivot-pin securing the wheel to the front axle passes. This member also has a depending lug 41, to which is connected the usual actuating-bar 42 to move the device on its vertical pivot. The boss 26 on the swinging arm 118 receives the wheel-spindle on which the wheel is mounted. The boss 31 and pin 30 are omitted, since the wheel is not a driven wheel; but in other respects the structure is identical in its construction and operation with that shown in Figs. 1, 2, and 3.

In place of a simple spring between the fixed and swinging members I use, especially for heavy vehicles, a modified form of cushioning device, as shown in Figs. 4 and 5. In Fig. 4 the upper plate 15 carries a cylinder 44, pivoted to said plate at 45, so as to have a short swing to automatically adjust itself in alinement with the lower cylinder 46, pivoted at 47 in the lower plate 23 of the swinging arm, so that the upper cylinder will not bind in the lower one, in which it works when the swinging arm assumes its various angular positions. The lower cylinder has an air-inlet 48, closed by a valve 49, so that the cylinders will be filled with air to form an air-cushion that will assist the spring 16 mounted within the cylinders, as shown. In Fig. 5 I make use of a cataract. The upper cylinder 50 is closed at both ends, but has a perforation 51 in its lower end. The cylinder 50 is pivoted in plate 15 at 52. The lower cylinder 57 is pivoted in plate 23 at 53 and is open at its upper end to receive the cylinder 50, which works in it as a piston. Oil or other liquid is placed in the lower cylinder, so that when the piston is forced down the oil will pass through perforation 51 into the hollow piston, and thereby retard the upward movement of the wheel, at the same time compressing the air in the hollow piston. A spring 57^a surrounds the cylinders, its upper end limited by a flange 54 on plate 15 and its lower end adjustably held by internally-threaded rings 55 on the threaded portion 56 of the cylinder 57.

Figs. 8 and 9 show two forms where the device is attached to the frame of a motor-vehicle, said frame acting in this case as the rigid arm. 60 is a portion of the side member of the vehicle-frame, having a pivot-block 61 secured thereto and a depending arcuate portion or member 62 struck from 61 as a center. The member 62 has two slots 63, through which pass pins 64, fixed in the arcuate portion 65 of the swinging member 66 pivoted in 61. On the opposite side or back of piece 62 is a friction-plate 67, connected to the arcuate portion 65 by the pins 64, so that said plate and swinging arcuate portion 65 move in unison one on one side and the other on the opposite side of plate 62. A spring 68 is suitably placed between the swinging and the relatively fixed members 66 and 60. On the swinging member is secured a fork 69, having a pin 70 therein, said pin being keyed or otherwise rigidly secured to a steering-wheel spindle, as is customary. The lower end of the pin 70 is squared, as shown at 71, to receive a lever 72^a, to which is connected the steering-rod. (Not shown.) Fig. 9 shows a mount for a driven wheel identical with that shown in Fig. 8, excepting that the swinging member 65 has a boss 72, into which is shrunk the wheel-spindle.

From the above description it will be seen that in all the forms illustrated the wheels, which are each independently movable on the pivots, will not impart a sudden jar to the vehicle, for when the wheel strikes an obstruction it is not suddenly lifted, but moves around the pivot-point of the swinging arm, and is thereby assisted in rolling over the obstruction, while the body of the vehicle and the other wheels remain unaffected thereby.

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

1. In a mount for a vehicle-wheel, the combination with a stationary member on the vehicle; of a swinging member pivoted at one end thereto and having a friction-face, means to guide the opposite end of the said swinging member and having a friction-face cooperating with the face on the swinging member, means between the two members to cushion the movement of the swinging member and means projecting from the swinging member on which a wheel is rotatively mounted.

2. In a mount for a vehicle-wheel, the combination with a stationary member on the vehicle; of a swinging member pivoted at one end thereto and having an arcuate friction-face, arcuate means to guide the opposite end of said swinging member, means between the two members to cushion the movement of the swinging member and means projecting from the swinging member on which a wheel is rotatively mounted.

3. In a wheel-mount, the combination with

a relatively fixed member on the vehicle having an arcuate portion; of a swinging member pivoted at one end thereto and having a like arcuate portion, means frictionally connecting the arcuate portions, means between the two members to cushion the movement of the swinging member and a wheel mounted on the swinging member, whereby said wheel can have movement about the pivot-point in a vertical plane parallel to the direction of travel and independent of the other wheels of the vehicle.

4. In a wheel-mount, the combination with a relatively fixed member on the vehicle and having an arcuate portion; of a swinging member having a like arcuate portion and pivoted on one side to the fixed member at the center of said arcuate portion, a friction-plate connected to the arcuate portion of the swinging member on the other side of said fixed member to frictionally retard the movement of the swinging member, a spring between the two members, whereby a wheel mounted on the spindle can have movement about the pivot-point and in a vertical plane parallel to the direction of travel of the vehicle.

5. In a wheel-mount, the combination with a rigid arm and means to detachably secure it at right angles to an axle; of a swinging arm, means to pivotally connect the arms at one end, means to slidably connect the other ends of said arms, friction means between the two arms, a coil-spring between the two arms, a boss between the ends of the swinging arm and a wheel-spindle in said boss.

6. In a wheel-mount, the combination with a rigid arm and means thereon to pivot said arm to an axle to move in a horizontal plane around its pivot-point; of a vertically-swinging arm, said arms pivoted together at one end and slidably connected at the other, to produce friction between them, means between the arms to cushion the swinging arm and a wheel-spindle mounted in the swinging arm.

7. In a wheel-mount, the combination with a rigid arm and means to detachably connect it to an axle, said arm having an arcuate slotted end and a plate projecting from the top of said arcuate end; of a similarly-shaped swinging arm pivoted at one end to an end of the rigid arm, and a plate projecting from the lower part of the arcuate end of said swinging arm under the plate on the rigid arm, a spring between the two plates, pins in the arcuate end of the swinging arm projecting through the slots, a friction-plate mounted on the pins to slide on the arcuate portion of the rigid arm, means to adjust the friction of said plate, a boss on the swinging arm and a wheel-spindle in the boss, substantially as and for the purpose set forth.

8. In a wheel-mount, a rigid member, a swinging member pivotally connected to the rigid member to swing in a plane parallel to the wheel, a wheel-spindle on the swinging member and means to retard the swing of the swinging member including a friction-retard, an air-cushion retard and a spring-retard, substantially as and for the purposes set forth.

9. In a wheel-mount, a rigid member, a swinging member pivotally connected to the rigid member, a wheel-spindle on the swinging member and means to retard the swing of the swinging member including an air-cushion retard, a spring-retard and a liquid-cataract retard, substantially as set forth.

10. In a wheel-mount, a rigid member, a swinging member pivotally connected to the rigid member, a wheel-spindle on the swinging member and means to retard the swing of the swinging member including a friction-retard, a resilient retard and a liquid-cataract retard, substantially as set forth.

11. In a wheel-mount, the combination with a rigid arm and means to connect it to an axle, said arm having an arcuate slotted end and a bearing projecting from the top of said end; of a similarly-shaped swinging arm, a bolt pivotally connecting the arms at one end, a bearing projecting from the lower part of the arcuate end of the swinging arm under the first bearing, a cylinder pivoted in each bearing, one cylinder working within the other, an air-admission valve in one cylinder, a spring within and exerting pressure between the two cylinders, pins in the arcuate portion of the swinging arm projecting through the slots and a friction-plate mounted on the pins in frictional contact with the arcuate portion of the rigid arm, substantially as and for the purposes set forth.

12. The combination with a driving-wheel and sprocket-wheel thereon and a brake, of a rigid member secured to the axle of the vehicle, a swinging member pivoted to the rigid member, means to retard the movement of the swinging member and a device on the swinging member to actuate the brake, said device capable of being set in operation by the driver of the vehicle, substantially as set forth.

13. The combination with a driving-wheel, a driving and a driven sprocket-wheel, of a fixed member, a swinging arm pivoted to the fixed member, means to retard the movement of the swinging arm, a wheel-spindle on the swinging arm on which said driving and sprocket wheels are mounted, the pivot-point of the swinging arm and of the driving-pinion being substantially the same whereby the upward and downward movements of the wheel with respect to the axle will not produce a slack in the driving-chain.

14. The combination with an axle, of an arm secured near one end to the end of the axle, a swinging arm pivoted at one end to

the free end of the arm on the axle, a wheel-spindle on the swinging arm and means between the two arms to hold the swinging arm in position for the spindle thereon to be about in alinement with the axle under normal conditions, said means also permitting the movement and cushioning of the swinging arm.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

GEORGE D. MUNSING.

Witnesses:

GEORGE R. BOURNE,

MALCOLM B. EGBERT.