

(No Model.)

A. C. SMITH.
AUTOMATIC VEHICLE BRAKE.

No. 542,741.

Patented July 16, 1895.

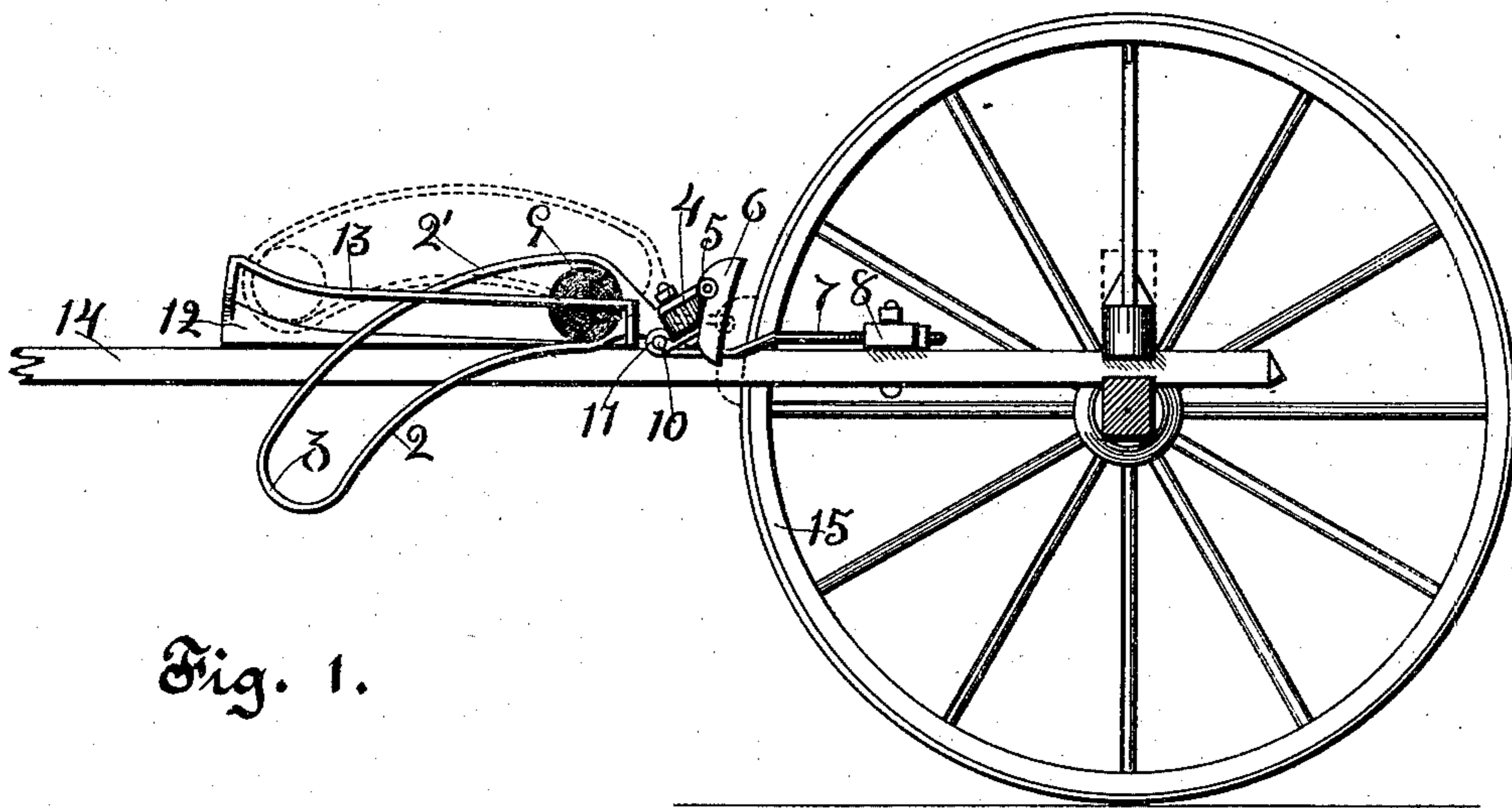


Fig. 1.

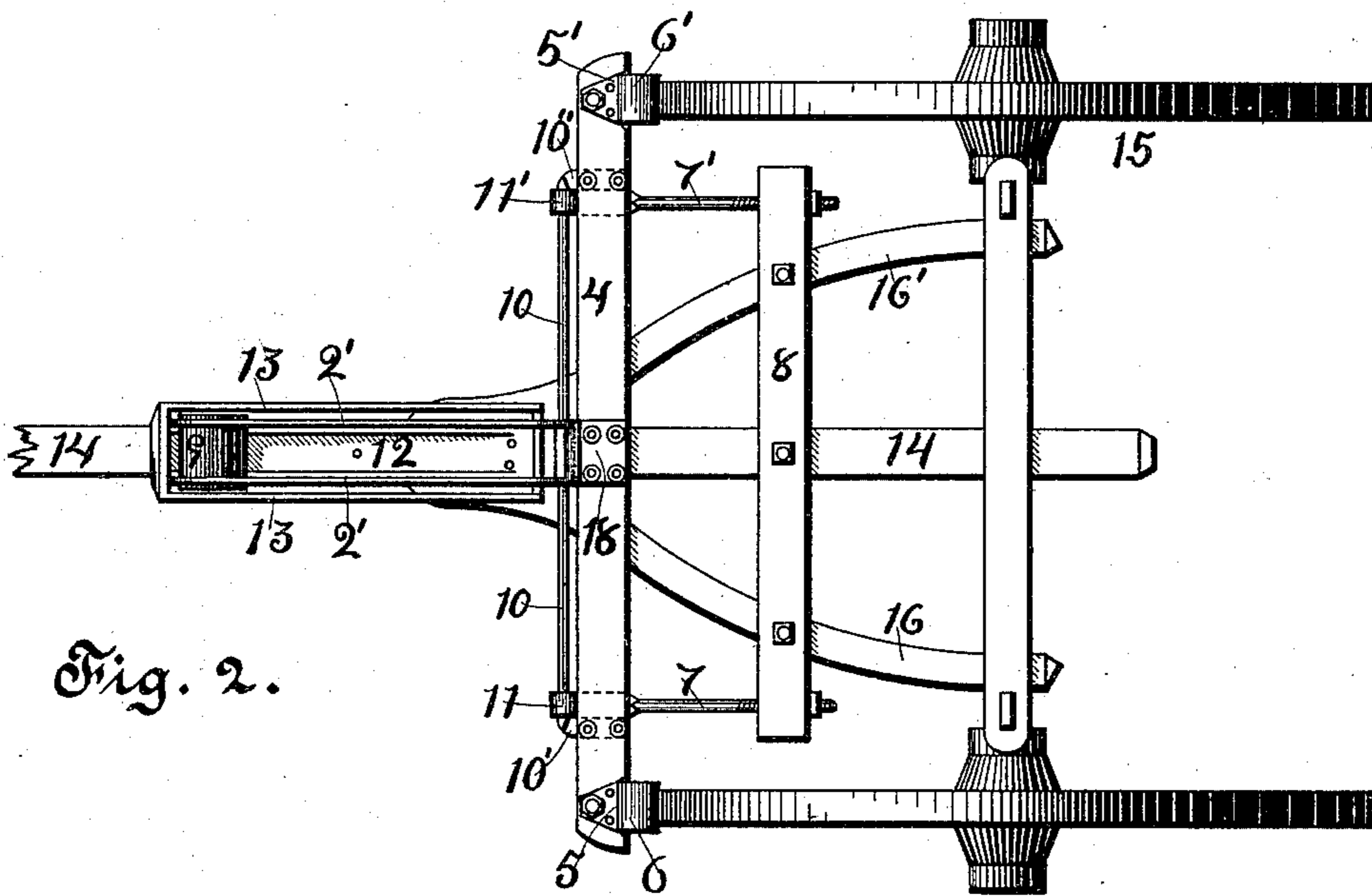


Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

ALBERT C. SMITH, OF BLAIR, NEBRASKA, ASSIGNOR OF ONE-HALF TO
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AUTOMATIC VEHICLE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 542,741, dated July 16, 1895.

Application filed January 3, 1895. Serial No. 533,743. (No model.)

To all whom it may concern:

Be it known that I, ALBERT C. SMITH, a citizen of the United States, residing at Blair, in the county of Washington and State of Nebraska, have invented a new and useful Automatic Vehicle-Brake, of which the following is a specification.

My invention relates to an improvement in automatic brakes for vehicles, whereby the action of the brake is independent of the team or load, and is impulsed and controlled by the gradients of the road traversed, the brake automatically applying itself on a descending and releasing itself when reaching a level or ascending gradient.

In the drawings forming part of this specification, Figure 1 is a side view of the hind part of a wagon-gear with the adjacent wheel and hound removed. Fig. 2 is a top view of the hind part of a wagon-gear, including a larger portion of the reach on a descending gradient.

Similar numerals refer to similar parts throughout the views.

The rock-shaft 10 is journaled in boxes 11 and 11' at forward ends of the adjusting-rods 7 and 7', which have their rear ends provided with threads and nuts and pass through the bar 8 bolted on top of and across the hounds 16 and 16' and reach 14. Arms 10' and 10'' on the ends of the rock-shaft are attached to and carry the brake-beam 4, disposed across the hounds and reach, forward the wheels. The brake-beam, as attached to the arms 10', 10'', and 18, serves to reinforce the rock-shaft, making the construction strong, light, and durable. On the ends of the beam 4 the brake-shoes 6 and 6' are attached by the pivotings 5 and 5' to swing in vertical planes.

Forward of the rock-shaft, on top of and parallel with the reach, is fastened the incline-track 12 to carry the rolling cylindrical weight 9, which is free to roll backward and forward. The base of the track is of the same width as the reach, the ends widened at top to support the ends of the guides 13 13, which keep the rolling weight 9 on the track and are farther apart than the width of the reach or base of the track. The track is inclined upward throughout toward the forward end,

so that the rolling weight normally rests in its rear end when the road is level. It has also a sharper upward curved inclination at its forward end.

Attached to the rock-shaft is a pair of forwardly-projecting arms 22 and an integral rearwardly-projecting arm 18 riveted to the brake-beam. The arms 22 are disposed to swing in vertical planes at opposite sides of the track 12, and between the guides 13 and 13 and bear against the under side of the rolling weight 9. As the brake-beam with the shoes and attaching-arms 10', 10'', and 18 overbalance the weight of the arms 22 the beam normally falls, bringing the shoes in contact with the wheels, as shown in Fig. 2 and by the broken lines in Fig. 1. The arms 22 are curved downward toward their forward ends, and are set at such angle on the shaft that when the rolling weight 9 is at the rear end of the track it depresses the levers 22 and raises the brake from the wheels, the projecting forward ends of arms 22 falling below the track; but when the rolling weight, passes toward the forward end of the track as in descending a hill, it allows the curved arms to raise and the brake falls against the wheels.

To make the brake more certain in its action the arms 22 are curved upward at their extended ends and brought back in return curves 2' 2' above and parallel with the lower arms 22 and in the same plane, forming the curved loops or slots 3, in which the rolling weight passes loosely from end to end. This pair of looped or slotted arms may be cast in an integral piece of malleable iron with the lever 18, as shown in the drawings, or may be made of separate wrought-iron rods and fastened together on the rock-shaft and brake-beam; also, as a modification, a single loop or curved arm 2 may be used, oscillating centrally through a track adapted to carry a spherical rolling weight instead of the cylindrical roller 9; as set forth above, and will perform the same work in the same manner, and would be better adapted to light vehicles. The principal features in operation are as follows: On a descending gradient of the road the roller rolls forward, and in case the rock-

shaft sticks in its journalings from accumulations of mud or ice the roller strikes the under side of the upper parts 2' 2' of the slotted arm 3 and forces the brake to the wheel.

The pivoted brake-shoes adjust themselves to the periphery of the wheel, and when the brake is off their faces hang parallel with the same, so that matter picked up by the wheel will not wedge in between it and the shoe. When the brake is on the pivots of the shoes are a little above a line cutting the axial centers of the wheels and rock-shaft. Hence the motion of the wheels tends to draw the brake more forcibly on, and the roller bearing against the top 2' of the loop prevents any rebounding or jumping vibration of the shoe on the wheel, giving the brake an even steady bearing. By turning the nuts on the adjusting-rods 7 and 7' wear of the shoes is compensated, and the track is adjustable backward and forward on the reach to agree with the slotted arms. The adjustment is made so that for an ordinary gradient the brake is on when the roller has reached the foot of the sharper upward curved inclination at the forward end of the track. Then in coming to a steeper descending gradient of the road the roller moves farther forward, letting the brake on with more force, and when a sufficiently inclined gradient is encountered the roller reaches the forward end of the track and the brake locks the wheels. As level road is again approached the roller moves backward on the track, depressing the arms 2 2 and releasing or throwing off the brake.

It will be observed that when the brake is on there are at times within the moving parts three distinct forces acting simultaneously to force on the brake, viz: the periphery of the wheel drawing down on the shoe by friction, the normal tendency of the beam and shoes to fall against the wheel, and the rolling weight pressing upward on the upper parts 2' 2' of the slotted arms. The proper adjustment of the parts to take the advantage of and utilize these forces is all provided for in the above-described machine. The roller in ordinary descending gradients generally serves only to modify the pressure of the brake by holding down the arms 2 2, but on sharper descents the full force is developed, even to locking the wheels.

On vehicles carrying a bed or body above the gear the ordinary links or stays may be attached to and connected with the ends of the rock-shaft to prevent sagging and twisting the wagon-gear. It will be further observed that by pivoting the rock-shaft higher with reference to the track 12 or by dropping the track a straight arm may be used instead of the curved arms 2 2 and give the same ac-

tion to the rock-shaft. Hence in bringing all the parts down on the reach the downwardly-curved arm is used.

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

1. In an automatic vehicle brake the combination of a vehicle gear, brake-shoes connected to and normally rocked against the wheels by a rock-shaft having an arm actuated by a rolling weight to rock the shoes from the wheels substantially as described.

2. In an automatic vehicle brake the combination of a vehicle gear, brake-shoes normally carried against the wheels by arms on a rock-shaft having an arm actuated by a rolling weight on an inclined track to rock the shoes from the wheels substantially as described.

3. In an automatic vehicle brake the combination of a vehicle gear, brake shoes normally carried against the wheels by arms on a rock-shaft having a curved arm, and actuated by a rolling weight, on a rearwardly descending track, to impinge the curved arm and rock off the brake substantially as described.

4. In an automatic vehicle brake, the combination of the vehicle gear, brake shoes normally carried against the wheels by arms on a rock-shaft journaled in adjusting rods, a rearwardly descending track having an upward curve, at the forward end, a free rolling weight to travel on the track and impinge an arm on the rock-shaft and rock off the brake substantially as described.

5. In an automatic vehicle brake the combination with the vehicle gear, of a rock-shaft carrying brake-shoes and having a slotted arm, and a rolling weight to run loosely in the slot and on a stationary track, substantially as described.

6. In an automatic vehicle brake, the combination of a vehicle gear, a rock-shaft carrying the brake-shoes and having a slotted arm, with a rolling weight to run loosely in the slot, and on a rearwardly descending track having an upward curved inclination at its forward end substantially as described.

7. The combination of a wagon gear a rock-shaft having arms carrying parallel therewith a reinforcing brake beam, a slotted arm on the rock-shaft a rolling weight to run loosely in the slot and on a stationary track on the gear, substantially as described.

Signed at Blair, in the county of Washington and State of Nebraska, this 29th day of December, 1894.

ALBERT C. SMITH.

Witnesses:

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