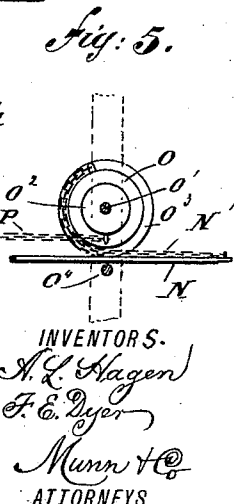
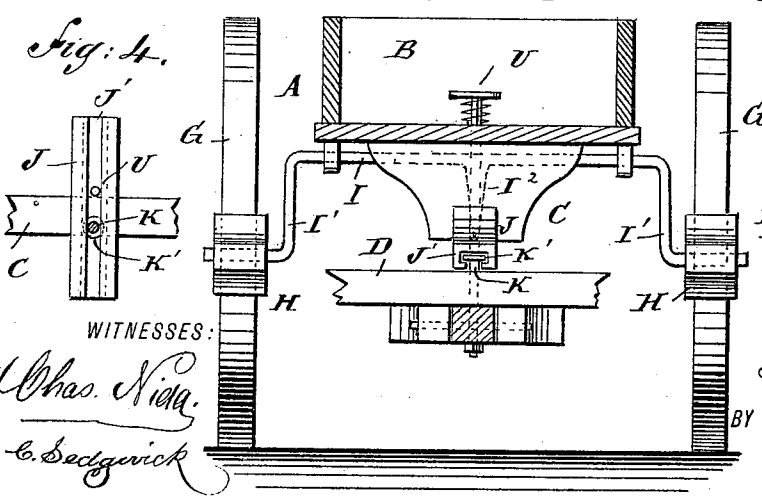
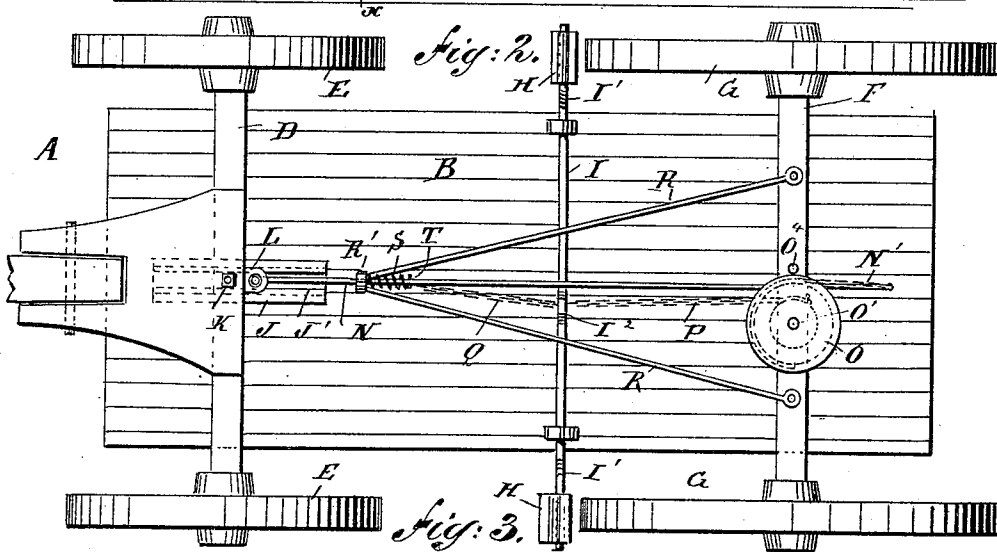
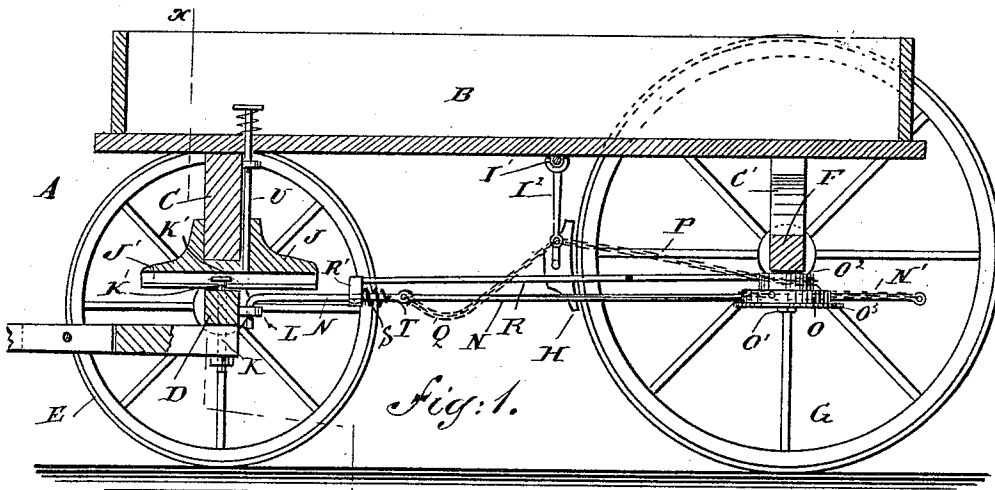


(No Model.)

A. L. HAGEN & F. E. DYER.
AUTOMATIC VEHICLE BRAKE.

No. 460,011.

Patented Sept. 22, 1891.



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ALFRED L. HAGEN, OF FRANKLIN, AND FRANK E. DYER, OF MOUNT
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AUTOMATIC VEHICLE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 460,011, dated September 22, 1891.

Application filed December 6, 1890. Serial No. 373,742. (No model.)

To all whom it may concern:

Be it known that we, ALFRED L. HAGEN, of Franklin, in the county of Hancock and State of Maine, and FRANK E. DYER, of Mount Desert, in the county of Hancock and State of Maine, have invented a new and Improved Automatic Vehicle-Brake, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved vehicle-brake which is simple and durable in construction, very effective and entirely automatic in operation, and is more especially designed for use on road wagons and other vehicles.

The invention consists in certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement as applied. Fig. 2 is an inverted plan view of the same. Fig. 3 is a transverse section of the same on the line *xx* of Fig. 1; Fig. 4 is an inverted plan view of the front bolster and its block, the king-bolt being in section; and Fig. 5 is a plan view of the power-transmitting mechanism.

The improved automatic vehicle-brake, as shown in the drawings, is applied to a road-wagon A of any approved construction, and provided with the usual bed or body B, having a front bolster C, supported on the front axle D, carrying the usual wheels E. On the rear end of the bed or body B is arranged the bolster C', connected with the rear axle F, supporting the rear wheels G. The latter are adapted to be braked by the brake-shoes H, hung in any suitable manner on the crank-arms I', formed or secured on the transversely-extending shaft I, mounted to turn in suitable bearings on the under side of the bed or body.

On the under side of the front bolster C and at its middle is secured a longitudinally-extending block J, fitted to slide with its under side on the top of the front axle D. On the under side of the block J is formed longitudinally an undercut groove J', engaged

by the head K' of the king-bolt K, held in the front axle D in the usual manner. The head K' of the king-bolt K is free to slide in the longitudinally-extending groove J', thus permitting a forward-and-backward movement of the vehicle bed or body B relatively to the front axle. At the same time the front wheels can be turned in the usual manner, the king-bolt being the axis.

At the rear side of the front axle D and in the middle of the same is formed or secured an eye L, into which is hooked a rod N, extending rearward a suitable distance beyond the rear axle F, as is plainly illustrated in the drawings. From the rear end of this rod N extends forward a rope or chain N', passing partly around the periphery of a wheel O, mounted to turn on a suitable stud O', secured to the rear axle F. A second but smaller wheel O² is formed on the top face of the wheel O, and is connected at its periphery by a chain P with the arm I², extending from the shaft I' of the ordinary brake mechanism previously described.

In order to retain the rod N in place at or near its rear end, the wheel O is provided at its bottom with an annular flange O³, on which is adapted to rest the said rod, and also the chain or rope N'. A pin O⁴ or a suitable bracket is held on the rear axle F to prevent lateral displacement of the rod N. The arm I² of the rod I is also connected with a chain Q, extending forward and connecting with the rod N near its front end, as is plainly shown in the drawings. This chain Q in the ordinary position is slack, as illustrated in Fig. 1.

Between the connection of the chain Q with the rod N and the front end of the said rod is fitted to slide the head R' of the reach R, connected in the usual manner with the rear axle F. A spring S is coiled on the said rod N between the head R' and a pin T, secured to the rod N. The rearward sliding motion of the head R' of the reach R is limited as soon as the spring S is fully compressed against the fixed pin T.

In order to lock the king-bolt K in place when the operator desires to back up a team and wagon, a spring-pressed rod U is provided, which slides through the block J from the top into the longitudinal groove J' to en-

gage the head of the king-bolt K. The spring-pressed rod U in its normal position is disengaged from the slot J', as is plainly shown in Fig. 1, and is entirely under the control of

5 the operator.

The operation is as follows: When a vehicle provided with the automatic brake is drawn forward on level ground, the brake-shoes H of the ordinary brake mechanism are out of
10 contact with the rear wheels G on account of the chain Q being drawn taut by the forward movement of the rod N and the rearward movement of the reach R, the spring S then being compressed and the king-bolt K being
15 in its outermost position in the groove J' of the block J. Now when the vehicle passes down a grade the weight on the wagon bed or body B causes a forward sliding of the said bed or body, which usually takes place sud-
20 denly on account of the team holding back on the tongue connected with the front axle D. This forward sliding of the bed or body brings the rear axle F nearer to the front axle B, and at the same time the rod N slides
25 rearward and, by its chain N' pulling on the wheel, turns the latter, so that the wheel O² is also rotated, thereby winding up the chain P, which thus draws on the arm I² and causes the shaft I to swing so that the crank-arms I'
30 move the brake-shoes H into frictional contact with the rear wheels G. The vehicle is then braked automatically by the movement of the vehicle bed or body. It is evident that the heavier the load in the vehicle bed or
35 body the harder the brake-shoes will be drawn against the rear wheels G, so as to brake the latter with more force, thereby relieving the team from all strain. As soon as the vehicle reaches level ground the team, pulling on the
40 front axle in the usual manner, causes a forward movement of the axle with relation to the rear axle, so that the two axles are drawn apart somewhat, whereby the rod N slides forward and by its chain N' releases the wheel O,
45 and at the same time the chain Q is again drawn taut, thus pulling the brake-shoes H off the rear wheels G. The reach R naturally moves away from the front axle D when the two axles D and F are drawn apart, as above described,
50 so that the spring S is again compressed on the fixed pin T. When going uphill, the brake-shoes remain off of the wheels, as the two axles D and F are then separated as much as possible, and the spring S will be most
55 heavily compressed by the rearward sliding of the rear axle F, which draws the reach R along and causes the head R' to strongly compress the spring S. When the vehicle is to be backed up, the operator presses the rod U
60 so as to move the lower end of the same into the path of the head of the king-bolt K, so that the rearward movement of the axle D is transmitted by the king-bolt K to the rod U and by the latter to the bed or body B, so that
65 the entire vehicle is backed up without actuating the brake-shoes H. It will thus be seen that the brake is entirely automatic and re-

quires no attention whatever from the driver either when going up or down hill or when traveling on level ground. It is further evi- 70 dent that as the brake-shoes are applied with more or less force, according to the weight on the wagon bed or body and the steepness of the grade, all strain is taken off of the team and the vehicle travels downhill easily. 75

By using the differential wheels O and O² the power of the brake is multiplied and the brake is quickly and surely applied, as it requires but a slight forward motion of the wagon-bed on the front axle to draw the brake-shoes 80 very tight. This slight forward movement of the bed naturally requires a holding back of the front axle by the team, but by the differential wheels above mentioned the hold-back power required of the team is reduced to a 85 minimum.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with a vehicle having 90 the front end of its body fitted to slide on the front axle, of a rod secured to the front axle and extending rearwardly beyond the rear axle, a reach secured to the rear axle and having a sliding connection with the rod, 95 a brake and connections between the brake and the forward and rear ends of the rod for applying and removing the brakes, substantially as described.

2. The combination, with the front axle 100 carrying a king-bolt whose head projects above the same, of a front bolster connected with the body, and a block secured to the bolster and having a longitudinal groove in which the head of the king-bolt works, substantially 105 as described.

3. The combination, with the front axle carrying a king-bolt whose head projects above the same, of a bolster secured to the body, a block secured to the bolster and hav- 110 ing a longitudinal groove in its under side, in which the head of the king-bolt works, and a sliding locking-rod adapted to be projected into the groove of the block to engage the head of the king-bolt, substantially as and 115 for the purpose set forth.

4. The combination, with a vehicle having its bed or body fitted to slide on the king-bolt of the front axle, of a rod connected with the front axle and extending rearward, a reach 120 secured to the rear axle of the said vehicle and fitted to slide at its front end on the said rod, an ordinary brake mechanism adapted to be actuated and controlled from the said rod, and a stop-pin held on the said rod for 125 limiting the rearward sliding motion of the said reach, substantially as shown and described.

5. The combination, with a vehicle having its bed or body fitted to slide on the king-bolt 130 of the front axle, of a rod connected with the front axle and extending rearward, a reach secured to the rear axle of the said vehicle and fitted to slide at its front end on the said

rod, an ordinary brake mechanism adapted to be actuated and controlled from the said rod, a stop-pin held on the said rod for limiting the rearward sliding motion of the said reach, and a spring interposed between the said stop-pin and the sliding head of the reach, substantially as shown and described.

6. The combination, with a rod connected with the front axle and adapted to slide longitudinally, of a chain or rope connected with the rear end of the said rod, a wheel mounted to turn at the rear end of the vehicle and connected with the said chain or rope, a second chain or rope also connected with the said wheel and with the ordinary brake mechanism and which actuates the same, substantially as shown and described.

7. The combination, with a rod connected with the front axle and adapted to slide longitudinally, of a chain or rope connected with the rear end of the said rod, a wheel mounted to turn at the rear end of the vehicle and connected with the said chain or rope, a second chain or rope also connected with the said wheel, and an ordinary brake provided with an arm connected with the said second-named chain, substantially as shown and described.

8. The combination, with a vehicle having the front end of its bed or body fitted to slide on the king-bolt held in the front axle, of an ordinary brake mechanism adapted to brake the rear wheels, a chain or rope connected with an arm on the said ordinary brake mechanism, a wheel connected with the said chain, a second larger wheel integral with the said first-named wheel, a second chain connected with the said second wheel, and a rod connected with the said second chain and also connected with the said front axle, substantially as shown and described.

9. The combination, with a vehicle having the front end of its bed or body fitted to slide on the king-bolt held in the front axle, of an ordinary brake mechanism adapted to brake the rear wheels, a chain or rope connected with an arm on the said ordinary brake mechanism, a wheel connected with the said chain, a second larger wheel integral with the said first-named wheel, a second chain connected with the said second wheel, a rod connected with the said second chain and also connected with the said front axle, and a reach extending from the rear axle of the said vehicle and having a head fitted to slide on the said rod, substantially as shown and described.

10. The combination, with a vehicle having the front end of its bed or body fitted to slide on the king-bolt held in the front axle, of an ordinary brake mechanism adapted to brake the rear wheels, a chain or rope connected with an arm on the said ordinary brake mechanism, a wheel connected with the said chain, a second larger wheel integral with the said first-named wheel, a second chain connected with the said second wheel, a rod connected with the said second chain and also connected with the said front axle, a reach extending from the rear axle of the said vehicle and having a head fitted to slide on the said rod, and a stop-pin for limiting the rearward motion of the head of the said reach, substantially as shown and described.

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