

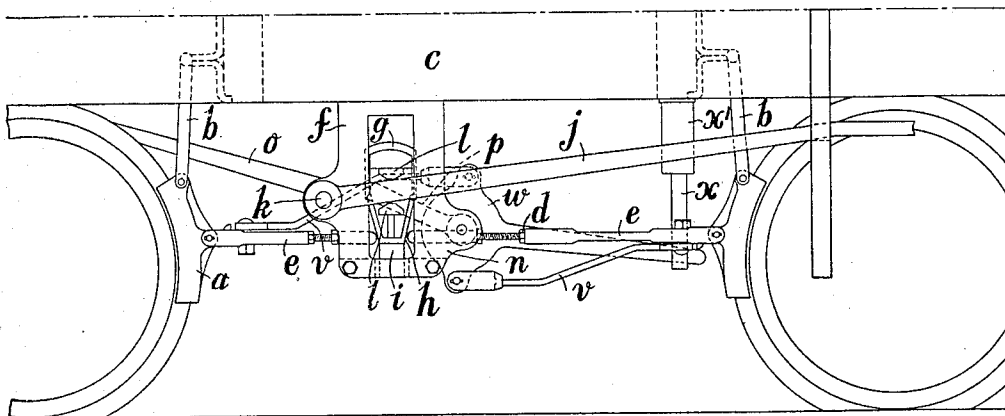
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PATENTED JUNE 11, 1907.

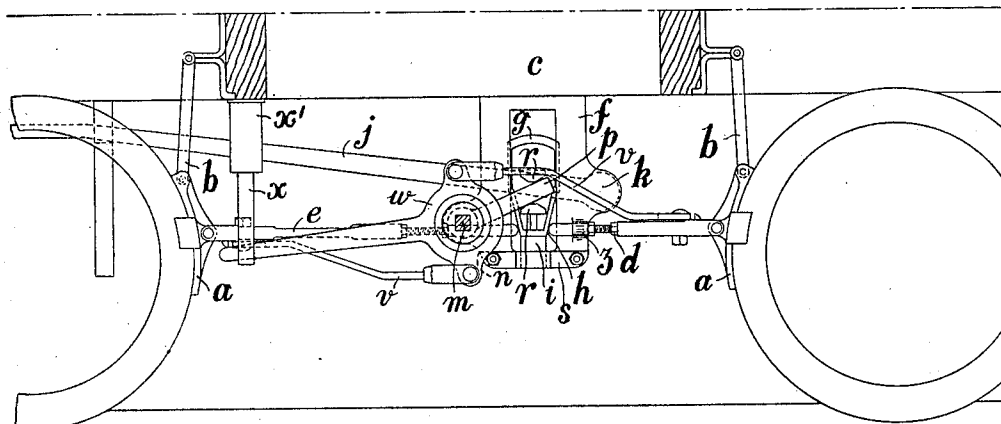
C. C. W. SIMPSON.  
BRAKE FOR RAILWAY VEHICLES.

APPLICATION FILED OCT. 20, 1906.

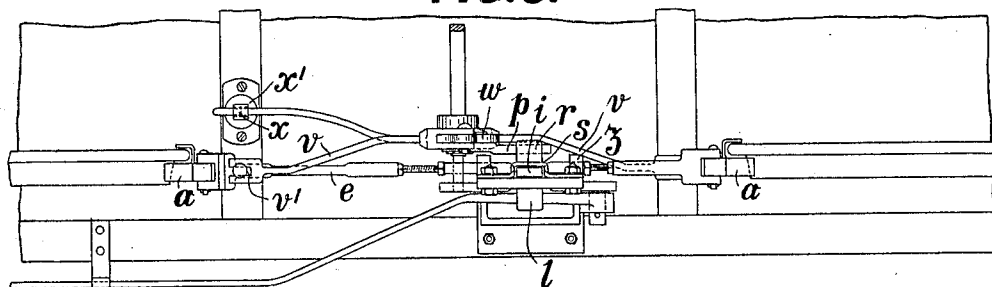
**FIG. 1.**



**FIG. 2.**



**FIG. 3.**



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## BRAKE FOR RAILWAY-VEHICLES.

No. 856,738.

Specification of Letters Patent.

Patented June 11, 1907.

Application filed October 20, 1906. Serial No. 339,791.

*To all whom it may concern:*

Be it known that I, CHARLES CHRISTOPHER WOODMAN SIMPSON, a subject of the King of Great Britain, residing in Wigan, in the county of Lancaster, in the Kingdom of England, colliery proprietor, have invented certain new and useful Improvements in Brakes for Railway Vehicles, for which application has been made in Hungary, 31st July, 1906; Austria, 31st July, 1906; Germany, 30th July, 1906; Cape Colony, 17th August, 1906; Natal, 17th August, 1906; Transvaal, 17th August, 1906, and Great Britain, No. 8777, 11th April, 1906.

This invention relates to braking apparatus for railway and other vehicles, and has for its object to provide an efficient braking device in which the braking action is applied by a dead positive pressure instead of elastic pressure as in the case of levers.

The invention lies in operating the brake by means of a wedge plate acting on rods secured to the brake blocks; the wedge being operated by levers and connected to these levers in such a manner that the brakes can be applied from either side of the vehicle, and also always be in a position to be operated by the right hand of the shunter.

Further, the present invention permits of a combination with the type of brake mentioned of a brake operated from the pressure cylinder of an air pressure steam or vacuum brake, which device is capable of working independently of the hand brake.

The invention will be best understood with reference to the accompanying drawings, in which it is shown as applied to a railway vehicle.

Figure 1 is a partial side view of a wagon showing the braking appliance; Fig. 2 is a sectional view of the wagon looked at from the opposite side; Fig. 3 is an underneath plan view of Fig. 2.

In carrying out the invention, the brake blocks *a* are supported on suspension links *b* from the sole plate *c*. Pivoted to the brake blocks *a* and on the center line of the same are bars *e* provided with suitable screw or other longitudinal adjustment devices *d*.

*f* is a horn plate fixed to the sole plate *c*. In this is carried and held by means of flanges a wedge plate *g* with lateral play so as to provide for compensating movement to take up automatically any uneven pressure caused by wear in either tires or brake blocks or other part. The wedge plate *g* has near its

lower extremity wedge or sloping sides *h*, and at the very extremity parallel sides *i*. *j* is a hand lever of the old laterally springy type pivoted at *k* to the horn plate *f*, or it can be pivoted to any other convenient fixed support or bracket carried by the sole plate *c*. On the wedge plate *g* are two lugs *l* projecting as far as the outside of the lever *j* which lies between them.

*m* is a rocking shaft supported on each side of the vehicle by brackets such as *n*. One of these brackets *n* in the arrangement shown in the drawings is formed integral with the horn plate, while the bracket on the other side is secured to the sole plate *c* of the wagon. To this rocking shaft *m* is fitted the hand lever *o* on the opposite side of the wagon, also there is fitted on the rocking shaft *m* the crank *p* lying between two lugs *r* on the wedge block or plate *g* similar to the projections *l*. The horn plate is continued down somewhat below the sloping sides *h* of the wedge plate *g*, the two sides being joined together at the bottom.

In addition to the rods *e* which act on the brake blocks *a*, there can be connected links *v* pivotally connected to a T lever *w* which is revolubly mounted on the rocking shaft *m*. The longest arm of the T lever is pivotally connected to a plunger *x* operated by an air pressure steam or vacuum brake, which latter may be of any known kind, and is indicated by *x'* in the accompanying drawings. It will be obvious that this combination is only possible in the case of brakes operated by a wedge, cam, or its equivalent acting on loose rods such as *e*, as otherwise the parts of the combination would not be capable of independent operation.

The links *v* are provided with elongated slots *v'*, which will permit of the brake blocks being applied to the wheels or released therefrom by the hand levers without imparting any movement to the crank arm that is connected to the brake cylinder.

The mode of action is as follows:—When the brake is required to be used the lever on either side of the wagon in the first case is raised until clear of the lip of the usual side guide, which releases the lever on the opposite side and is then pressed down in the usual way. The lever on either side is simply pressed down in the usual way, bringing the portion *h* of the wedge plate in contact with the horizontal bars *e* which forces the brake blocks *a* upon the tires of the wheels at

any required pressure. It is not found strictly necessary in order to keep the brake in the "on" position to have any special devices therefor, as the combined weight of the wedge block and levers will keep the brake in the "on" position. At the same time that the wedge plate *g* is depressed, the crank *p* is moved by the projections *r*, whereby the corresponding brake lever *o* is also moved. To remove the brakes, either of the two hand levers *j* and *o* is raised. When however it is desired to apply the brake to the wagon from say the engine or the guard's van by means of the vacuum steam or air pressure brake, the plunger *x* will be moved up, causing the T piece *w* to move about the rocking shaft *m*, forcing the two links *v* in opposite directions, and therefore forcing the brake blocks against the wheels. To remove the brakes the rod *z* is moved in the opposite direction.

It will be seen by the foregoing that the two braking actions can be operated entirely independently the one of the other.

The adjacent ends of the respective rods *e* slide in sockets *z* in the horn plate *f*. Further the brakes are only shown as operating on two wheels, but it is obvious that by placing similar apparatus on the opposite side of the wagon, all four wheels could be braked, and also by means of suitable links other wheels in a six or eight wheel carriage can also be braked. Where from any cause it is desirable to have a single brake the wedge device is just as applicable, as the pressure is taken up by the horn plate or other abutment in place of the usual brake shank.

I declare that what I claim is:—

1. In brakes for railway vehicles, the combination of a horn plate, a plurality of brake blocks, bars connected to said brake blocks and bearing in said horn plate, a wedge device slidably mounted in said horn plate, having its tapering end between the ends of said bars, and means for raising and lowering said wedge device from either side and from diametrically opposite corners of the vehicle.

2. In brakes for railway vehicles, a horn plate, brake blocks, bars connected to said brake blocks and bearing in said horn plate, a wedge device slidably in said horn plate with its taper part between the ends of said bars, a brake lever pivoted to said horn plate and engaging with said wedge device, a rocking shaft across the vehicle, a crank arm on said rocking shaft engaging with said wedge device, and a brake handle connected to said rocking shaft.

3. In brakes for railway vehicles, a horn plate, brake blocks, bars connected to said brake blocks and bearing in said horn plate, a wedge device slidably in said horn plate with its taper part between the ends of said bars, projecting lugs on both sides of said

wedge device, a brake lever pivoted to said horn plate and located between said lugs on one side of the wedge device, a rocking lever, a crank arm on said lever located between the lugs on the other side of said wedge device, and a brake lever on the opposite side of the vehicle or the like from said first brake lever connected to said rocking shaft.

4. In brakes for railway vehicles, a horn plate, brake blocks, bars connected to said brake blocks and bearing in said horn plate, means for adjusting the length of said bars, a wedge device slidably in said horn plate with its taper part between the ends of said bars, and means for raising and lowering said wedge device from either side and diametrically opposite corners of the vehicle or the like.

5. In brakes for railway vehicles, a horn plate, brake blocks, bars connected to said brake blocks and bearing in said horn plate, a wedge piece slidably in said horn plate, a straight portion toward the lower end of said wedge piece, and means located on either side of said vehicle and its opposite ends thereof for raising or lowering said wedge piece.

6. In brakes for railway vehicles, a horn plate, brake blocks, rods secured to said brake blocks and slidably bearing in said horn plate, a wedge device slidably in said horn plate located with its narrowed part normally between said bars, a brake handle on one side of the vehicle or the like directly engaging said wedge device, a brake handle on the other side of the vehicle, a cross shaft connected to said second brake handle, and a crank arm connected to said rocking shaft engaging directly with said wedge device.

7. In brakes for railway vehicles, a wedge device, a support and guide for said wedge device, brake blocks, means intermediate said wedge device and said brake blocks for positively actuating said brake blocks, handles at diametrically opposite corners of the vehicle for raising and lowering said wedge device.

8. In brakes for railway vehicles, a horn plate, a wedge device slidably in said horn plate, brake blocks, means for positively actuating said brake blocks from said wedge device, a tongue on said wedge device, a strap or guide piece about said tongue and secured to said horn plate, and means for operating said wedge device from either side of the vehicle and opposite ends thereof.

9. In brakes for railway vehicles, a horn plate, a wedge device slidably in said horn plate, brake blocks, means intermediate said wedge device and said blocks to positively operate said brake blocks, means for operating said wedge device from either side or from opposite ends of said vehicle or the like, a power cylinder, and means intermediate said power cylinder and said brake blocks

for operating said brake blocks independently of said hand levers.

10. In brakes for railway vehicles, a wedge device, brake blocks positively actuated  
5 from said wedge device, hand means for actuating said wedge device, a power cylinder, a plunger in said cylinder, a T lever connected to said plunger, means for supporting said T lever, links connected to said T lever and to  
10 said brake blocks.

11. In brakes for railway vehicles, a wedge, brake blocks positively actuated from said wedge device, hand means for actuating said wedge device, a power cylinder, a plunger in  
15 said cylinder, a T lever connected to said plunger, means for supporting said T lever, links connected to said T lever and to said brake blocks, and slots in said links.

12. In brakes for railway vehicles, a horn  
20 plate, a wedge device slidable in said horn plate, brake blocks, bars connected to said brake blocks and slidable in said horn plate, a brake handle pivotal on said horn plate and connected to said wedge device, a rocking  
25 shaft, a crank arm on said rocking shaft connected to said wedge device, a handle on said rocking shaft and on the opposite side of said vehicle from said first handle, a T shaped lever with two short and one long arm mount-  
30 ed on said rocking shaft, a power cylinder, a plunger in said cylinder connected to the long arm of said T piece, links connected to the short arm of said T piece and to the brake blocks.

13. In brakes for railway vehicles, the  
35 combination with hand means for operating the brakes of a cross shaft connected to said hand operating means, of a lever on said cross shaft, a power cylinder, connections between said lever and said power cylinder, and  
40 means connected with said lever for braking the vehicle.

14. In brakes for railway vehicles, a horn  
45 plate, a wedge device slidable in said horn plate, brake blocks, bars connected to said brake blocks and slidable in said horn plate, a brake handle pivotal on said horn plate and connected to said wedge device, a rocking shaft, a crank arm on said rocking shaft con-  
50 nected to said wedge device, a handle on said rocking shaft and on the opposite side of said

vehicle from said first handle, a T shaped lever with two short and one long arm mount-  
ed on said rocking shaft, a power cylinder, a plunger in said cylinder connected to the long  
55 arm of said T piece, and means connected to the short arms of said T lever for operating said brake blocks and permitting said brake handles and said brake cylinder to operate the brake independently one of the other. 60

15. In brakes for railway vehicles, brake blocks, wedging means connected to handles at either side and at different ends of said vehicle or the like for operating said brake  
65 blocks, a power cylinder, means for operating said brake blocks therefrom independently of said hand levers and wedging means.

16. In brakes for railway vehicles, a horn  
plate, a wedging device slidable in said horn  
70 plate, lugs on both sides of said horn plate, a hand lever pivotal in said horn plate located between the lugs of said wedge device on one side thereof, a rock shaft, a crank arm on  
said rock shaft located between the lugs of the wedge device on the opposite side there-  
75 of, a second hand lever on said rock shaft and on the opposite side and at the opposite end of said vehicle from said first brake handle, brake blocks, adjustable rods connected to said brake blocks and slidably bearing in said  
80 horn plate and located on either side of said wedging device, a downwardly projecting tongue on said wedge device, guiding means for said tongue on said horn plate, spring means on said horn plate for holding the  
85 wedge device in given positions, a T lever on said rock shaft with two short and one long arm, a power cylinder a plunger adapted to work in said power cylinder and connected to the long arm of said T lever, links between  
90 said brake blocks and the short arm of said T lever, and means for permitting movement of said brake blocks to their braking position without affecting said T lever.

In witness whereof, I have hereunto signed  
95 my name this third day of October, 1906, in the presence of two subscribing witnesses.

CHARLES C. W. SIMPSON.

Witnesses:

G. C. DYMOND,  
HUBERT HUMPHREY.