2 Sheets—Sheet 1.

S. P. TALLMAN.

Automatic Car-Brake.

No. 218,838. **Patented Aug. 26, 1879.**

FIG. 1.

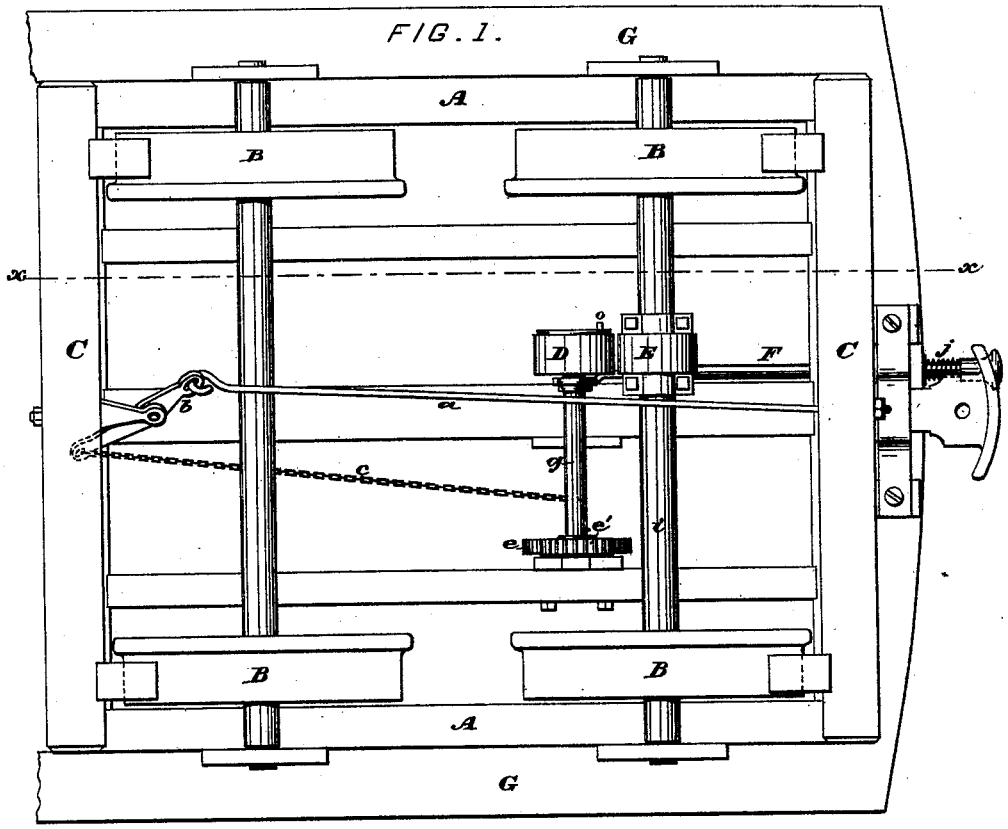
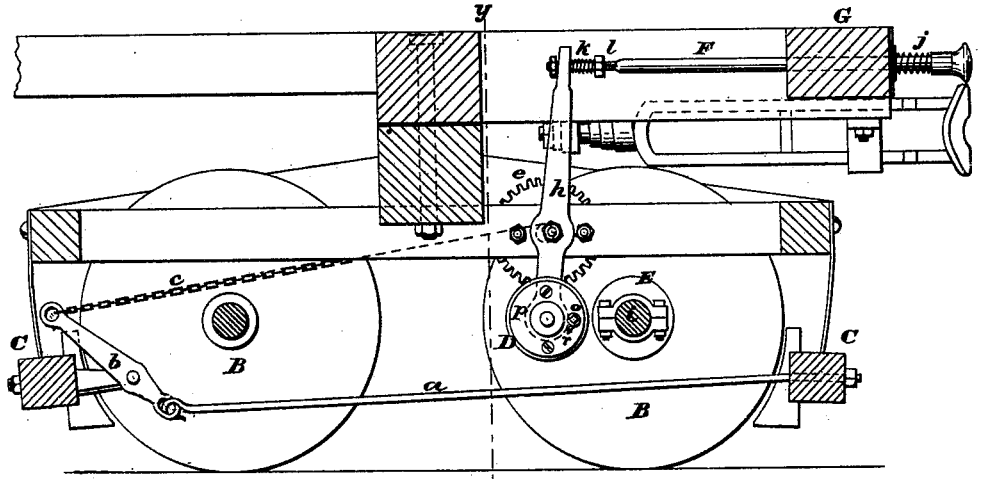


FIG. 2.



ATTEST:

Walter W. Scott.

Chas. Eben Brown

INVENTOR:

Stephen P. Tallman

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2 Sheets—Sheet 2.

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FIG. 3.

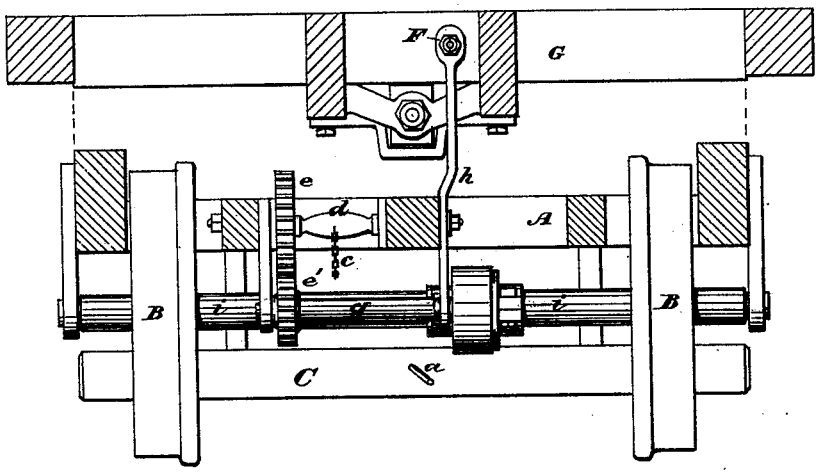


FIG. 4.

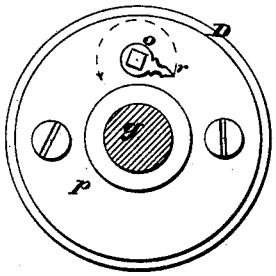
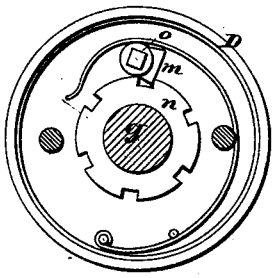


FIG. 5.



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UNITED STATES PATENT OFFICE.

STEPHEN P. TALLMAN, OF DUNELLEN, NEW JERSEY.

IMPROVEMENT IN AUTOMATIC CAR-BRAKES.

Specification forming part of Letters Patent No. **218,838**, dated August 26, 1879; application filed April 25, 1879.

To all whom it may concern:

Be it known that I, STEPHEN P. TALLMAN, of Dunellen, in the county of Middlesex and State of New Jersey, have invented certain Improvements in Automatic Brakes for Cars, of which the following is a specification.

This invention relates to that class of automatic brakes for railway-cars in which the checking of the engine, and the consequent closing of the cars upon each other by their momentum, serves to automatically close the brakes upon the wheels; and the invention consists in certain novel elements of mechanism and combinations thereof, arranged and adapted to effect this purpose, and also to permit the train to be backed without putting on the brakes.

It also relates to an arrangement of the mechanism whereby the same may be set so as to properly actuate the brakes whichever end of the car is foremost, or set so as to be entirely inoperative, all as will be more fully hereinafter set forth.

In the drawings, which serve to illustrate my invention, Figure 1 is a plan of the under side of a car-truck provided with my improved brake and mechanism. Fig. 2 is a longitudinal vertical section of the same, taken in the plane of the line *x x* in Fig. 1. Fig. 3 is a transverse section taken in the plane of the line *y y* in Fig. 2. Fig. 4 is an enlarged detached elevation of the reversible friction-pulley, and Fig. 5 is a view of the same with the face-plate removed.

Let A represent an ordinary truck-frame, and B B the wheels, of a railway-car, all arranged in the usual manner, or in any of the various ways employed in car-building.

C C are brake-bars, hung by springs to the truck-frame and provided with shoes, in the usual way. From the end brake-bar a rod, *a*, extends under the truck and takes hold of a pivoted lever, *b*, hung to the other bar, as shown in Figs. 1 and 2, and to the opposite end of this lever is attached a brake-chain, *c*. This chain extends forward, and is attached at its other end to a windlass barrel or shaft, *d*, which bears a gear-wheel, *e*, arranged to mesh with another gear or pinion, *e'*, on a shaft, *g*.

The windlass *d* is arranged to rotate in suitable fixed bearings, substantially as shown; but the shaft *g* is mounted at one end in a bearing that will permit some lateral swing of the shaft, and at the other end in the pendent end of the pivoted or swinging lever *h*.

On the shaft *g* is mounted a friction-pulley, D, and on the axle *i* of the car is fixed a corresponding friction-pulley, E, the two being so mounted that their faces stand normally almost in contact. When, however, the upper end of the lever *h* is pressed back, the lower end, bearing the shaft *g*, is advanced, and this brings the peripheries of the friction-wheels D E into close contact.

To actuate the lever *h* automatically I provide a push-bar, F. This bar has bearings or ways in the car-frame G, and its inner end is attached to the upper end of the lever *h*, as shown, while its opposite end projects beyond the truck or car frame, and is provided with a head or enlargement to receive the force of the concussion when the cars come together.

So far as described the action of the brake is as follows: When the speed of the train-engine is checked the momentum of the cars causes them to crowd upon each other. This brings the head of the push-bar F into contact with the corresponding push-bar on the next car, or some portion of the frame of the said car, which forces it in. This brings the friction-pulleys D E into forced contact through the medium of the lever *h*. As the car-wheels continue to revolve, the frictional contact of the pulleys rotates the windlass *d* and shaft *g* through the medium of the gears *e e'*, which winds the chain *c* on the windlass-barrel *d*, and draws the brake-shoes forcibly up to the wheel-treads.

The pressure of the brakes is kept up as long as the wheels are in motion; but when the train stops, the pressure is taken off the push-bar by the separation of the cars. When this pressure is removed the bar F is retracted or driven out by means of a suitable spring, *j*.

To provide for elastic contact of the pulleys D E, and also for a variable amount of longitudinal travel of the bar F, I arrange or construct the bar to pass through an eye in the lever *h*, and place a spring, *k*, between said lever and an adjustable collar or nut, *l*, on the bar, so that said spring is compressed when the lever is pushed back. Thus the force with

which the friction-pulleys are held in contact is measured by the force or strength of the compressed spring *k*, and this may be regulated by means of the adjusting nut or collar *l*.

If the friction-pulley D were secured to the shaft *g* it is obvious that in backing the train the brakes would be put on by the winding up of the chain on the windlass in the other direction. To avoid this I mount the pulley loosely on the shaft and provide it with a spring-actuated pawl, *m*, arranged to engage the teeth of a ratchet-wheel, *n*, fixed on the shaft *g*. This pawl permits the pulley to rotate independently of the shaft in one direction, and causes it to drive the shaft when rotated the other way.

By reference to Fig. 5 it will be seen that the pawl *m* is generally triangular in form, with two salient and one rounded angle, and is secured to a spindle, *o*, which projects through the removable face-plate *p* of the pulley D. By means of this spindle the pawl may be turned over or reversed, so that either of its salient angles or corners may be made to engage the notches in the ratchet-wheel *n* and act as a detent, to prevent the independent rotation of the pulley in either direction, according to the way the pawl is turned.

It will be seen that when the pawl is so turned as to act as a detent when the pulley D is rotated by the forward movement of the car, it will glide over the ratchet-teeth and be inoperative when the car is backed. When, however, the car is to be run with the other end foremost, the pawl is simply turned over by applying a key or wrench to the projecting end of the spindle *o*, and the operation of the pawl and ratchet is reversed to suit the altered circumstances.

If it be desired at any time to render this automatic mechanism entirely inoperative, the pawl *m* is turned half-way over—that is, until its broader end stands outward from the center, in which position it is retained by the pressure of the pawl-spring, and stands entirely clear of the ratchet. In such a case the brakes may be operated by hand, in the usual way. Indeed, as an auxiliary to my automatic brake, the ordinary brake-chain may be attached to the upper end of the lever *b*, and extend from it to the usual rod or shaft bearing the brake-wheel.

To enable the train-men to see at a glance in which way the pawl *m* is turned, I provide the spindle *o* with an index or pointer, *r*, outside of the face piece or plate *p*. The position or inclination of this index will indicate at once the position of the pawl.

The friction-pulley E is made in two sections for convenience in attaching it to the axle *i*, and it may be attached to either axle of the truck.

The gear-wheels *e e'* may be of the same size or of different sizes, depending upon the circumstances of the case; but in general I prefer to make the gear *e'* the smallest, as I thereby bring more power to bear in braking.

Having thus described my invention, I wish it understood that I do not claim, broadly, any device whereby the momentum of the cars in checking up is caused to automatically operate the brakes; but

What I do claim is—

1. In an automatic car-brake, the independent push-bar F, provided with a retracting-spring, *j*, a cushion-spring, *k*, and an adjusting nut or collar, *l*, in combination with the lever *h* and the friction-pulley D, all arranged substantially as set forth.

2. In an automatic car-brake, the combination of the independent push-bar F, the springs *j* and *k*, the adjustable collar or nut *l*, the lever *h*, the friction-pulley D, the ratchet-wheel *n*, the reversible pawl *m* and its spring, the pawl-spindle *o*, and the fixed pulley E, all arranged to operate substantially as set forth.

3. The friction-pulley D, arranged to turn freely on its shaft, the reversible pawl *m*, fixed to a spindle, *o*, mounted in bearings in the friction-pulley, and arranged to be thrown over from side to side, or to be turned up so as to be maintained in position by its spring when disengaged, a pawl-spring arranged to act upon the pawl in any of its three positions, and a fixed ratchet-wheel, *n*, arranged to be engaged by the pawl, all combined and arranged to operate substantially as set forth.

4. In a car-brake, a friction-pulley, D, provided with a reversible pawl, *m*, and a pawl-spring to press thereon, the said pawl being provided with a spindle whereby it may be thrown over, so as to operate inversely, or turned up, so as to be inoperative, in combination with a ratchet-wheel, as set forth.

5. In a car-brake arranged to be operated automatically, as set forth, the friction-pulley D, provided with a pawl, *m*, having two angles to engage the ratchet-teeth, and a flattened face between them for the spring to bear upon when the pawl is disengaged, and a spindle, *o*, provided with a mark or index to show in which position the pawl is standing, substantially as set forth.

6. In a car-brake arranged to be operated automatically, as set forth, the friction-pulley D, provided with a reversible pawl, a pawl-spring, a spindle, *o*, and an index or pointer, *r*, in combination with the shaft *g* and ratchet *n*, fixed thereon, all substantially as herein set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

STEPHEN P. TALLMAN.

Witnesses:
HENRY CONNETT,
ARTHUR C. FRASER.