(No Model.)

E. FARNSWORTH.

AUTOMATIC CAR BRAKE.

No. 486,453. Patented Nov. 22, 1892.

Fig. 1.

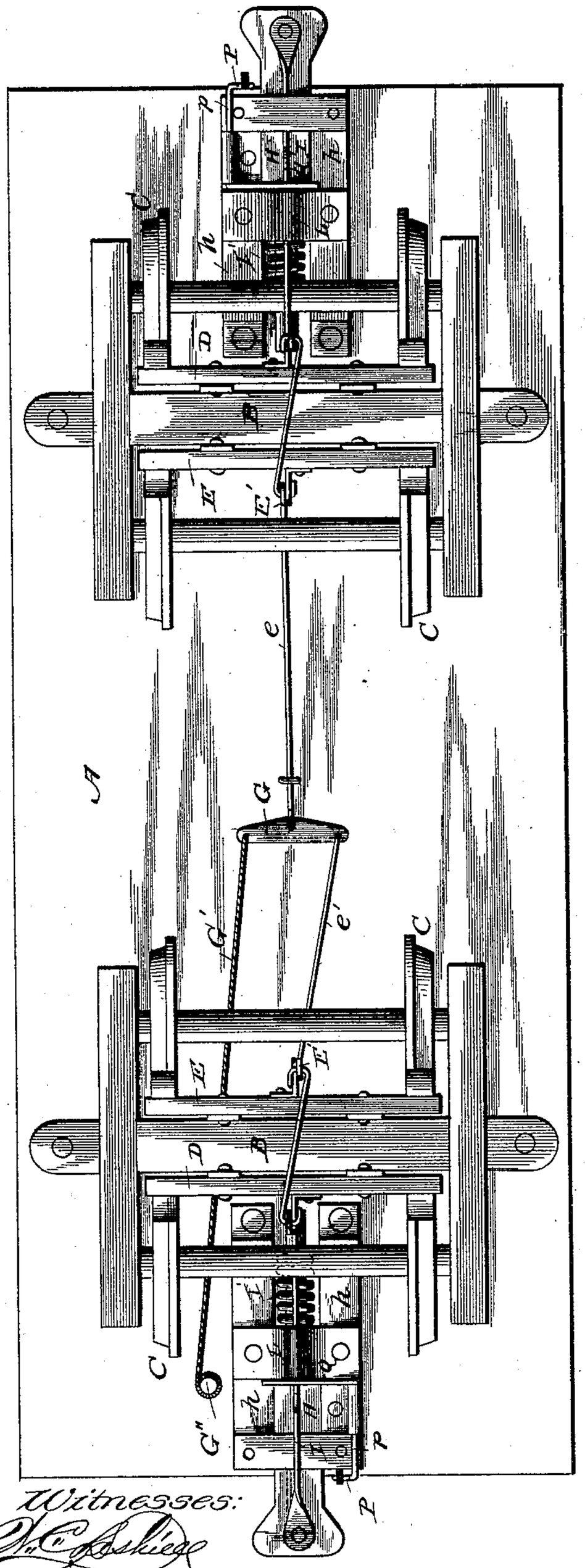

Fig. 3.

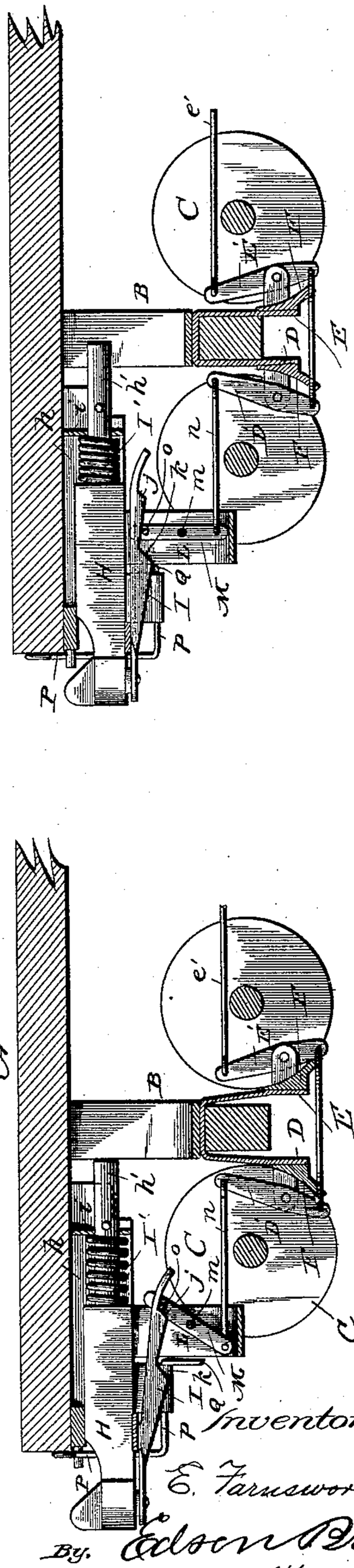

Fig. 2.

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UNITED STATES PATENT OFFICE.

ENOCH FARNSWORTH, OF UTAHVILLE, PENNSYLVANIA.

AUTOMATIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 486,453, dated November 22, 1892.

Application filed February 16, 1892. Serial No. 421,734. (No model.)

To all whom it may concern:

Be it known that I, ENOCH FARNSWORTH, a citizen of the United States, residing at Utahville, in the county of Clearfield and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Car-Brakes; 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.

My invention relates to improvements in automatic car-brakes of that class which are actuated by the endwise movement of the draw-bar, an example of which is disclosed in my prior patent, No. 300,585, dated June 17, 1884; and the object of the present improvement is to provide means whereby the inward or rearward movement of the draw-bar, when the train is moving backward, can be utilized in conjunction with the pressure of the cushion-spring to apply the brakes with great force against the wheels, and thus effectually lock or restrain the wheels from movement, which is especially desirable when traveling over steep grades in the tracks.

A further object of my invention is to provide an improved automatic brake in which the brake-shoes are normally applied against the wheels by the pressure of the cushion-spring on the draw-bar when the train is at rest or standing still, and to provide means whereby the pressure of the cushion-spring, when the train is backing, can be taken off the brake-shoes, so that the latter will be free from the wheels and permit the train to be backed without overcoming the friction and resistance of the shoes on the said wheels; and, finally, my invention has for its object to provide simple and effective means for carrying the foregoing ends into practice.

With these ends in view my invention consists in the combination, with an endwise-movable draw-bar and the brake-beam carrying the shoes, of a trip or detent movable with the draw-bar, an operating-lever having means in the path of said trip or detent and normally in engagement therewith, so that the pressure of the cushion-spring on the draw-bar is transmitted through the detent or trip to the operating-lever and thence to the brake-beam, and a manually-operative lever arranged to disconnect the trip or detent from the operating-lever to permit the draw-bar to move inward or rearward without influencing the operating-lever, all as will be hereinafter more fully described, and pointed out in the claims.

To enable others to more readily understand my invention, I have illustrated the same in the accompanying drawings, in which—

Figure 1 is a plan view of the bottom of a freight or other car with my improved automatic-brake mechanism applied thereto. Fig. 2 is a vertical longitudinal sectional view on the line *x x* of Fig. 1, showing the draw-bar in its normal position when the car is at rest and the shoes applied to the wheels of the truck. Fig. 3 is a sectional view similar to Fig. 2, but showing the draw-bar moved rearwardly, as in the act of backing the car, and with the detent or trip released from the operating-lever, so that the brake-shoes are free of the wheels.

Like letters of reference denote corresponding parts in all the figures of the drawings.

Referring more particularly to Fig. 1, A is the platform of an ordinary freight-car or any other kind of a car. B are the trucks carrying the wheels C. D E are the two brake-beams on each of the trucks, and F are the brake-shoes carried by the beams and arranged to bear against the treads of the wheels in the usual manner.

The brake-beams D E on each truck are suitably supported on the framing of the truck, and said beams are connected to upright operating-levers D′ E′, the two levers being connected for simultaneous operating by means of a link *d*, which is pivotally connected to the lower ends of the levers below the framing of the truck. At the middle of the car or its platform I provide a horizontal or vertical central lever G, and one end of this central lever is fastened to an operating cord or chain G′, which extends to a vertical shaft G″, passing through the platform at one end of the car and having a hand-wheel, by which the shaft may be turned to operate the central lever G, thus enabling the brake to be operated manually, if necessary or desirable. One end of this central lever is connected to the lever E′ by a link *e*, and the

central lever is also connected by a similar link *e'* to the other lever E' on the other truck of the car, as clearly shown in Fig. 1 of the drawings. The two inner levers E' E' on the opposite trucks are thus connected to a common central lever G, for manual operation of the brake; but the outer levers D' D' on the opposite trucks are connected to the two draw-bars in a manner to automatically operate the brakes, so as to apply the shoes against the wheels when the cars are at rest and to release said shoes when the draw-bar is moved in either direction, both when the train is moving forward or backward, so that the car can move without overcoming the resistance and friction of the shoes on the wheels.

As the two draw-bars at opposite ends of the car and the means for applying the cushion-spring to the operating parts, as well as relieving said parts of the pressure of the spring, are identically the same in construction and mode of operation, I will only describe one of said draw-bars and its coacting parts, it being understood that the other draw-bar and its operating parts are the same as the one described.

H is the endwise-movable draw-bar, which is arranged in suitable guides *h*, rigid on the bottom of the platform, in such manner that the draw-bar can move a limited distance both backward and forward between said guides. The inner end of this draw-bar is reduced, as at *h'*, as is usual, and around this reduced part of the draw-bar is placed a powerful coiled spring I', which bears at one end against a fixed abutment or plate *i*, rigid with the guides *h*, and at its other end against a shoulder on the draw-bar, as shown. A detent or trip I is connected to the draw-bar, so as to move with the same in its back-and-forth movements, and this detent or trip is also pivoted to said draw-bar to have a vertical movement or play independent of the endwise movement of said draw-bar. The trip is in the form of a long bar arranged longitudinally beneath the draw-bar, and the front end of said trip-bar is pivoted at *i* to the draw-bar near its front end. (See Figs. 1 and 2.) The rear end of this trip or detent is provided with an abrupt shoulder *j*, and in front of this abrupt shoulder the trip is formed with an inclined cam-surface *k*, both the shoulder and the cam being on the lower edge of the trip or detent.

Depending from the platform A or the guides *h* thereon is a vertical guide or loop L, which is rigid with the platform or the guides, and in this loop or guide L is arranged the operating-lever M, which lever is fulcrumed at an intermediate point of its length in the vertical loop, as at *m*. The lower end of the operating-lever is connected by a link or pitman *n* with the upper end of the brake-lever D', and the upper or free end of this operating-lever carries a stud, pin, or other projection *o*. This stud or projection *o* of the operating-lever is arranged in the path of the shoulder *j* on the rear end of the trip or detent I, and when the parts are in their normal position, as when the train is at rest, the pressure of the cushion-spring on the draw-bar is such that the trip or detent is forced against the shoulder or projection on the operating-lever, which in turn actuates the other levers D' E' to apply the shoes to the car-wheels. This trip or detent is adapted to fall by its weight or gravity, so that its abrupt shoulder *j* engages with the projection *o*, and when it is desired to back the cars without having the shoes applied to the wheels it is necessary to raise the trip sufficient for its abrupt shoulder *j* to clear the projection *o*, so that the draw-bar can move rearward without setting the brakes, as the cushion-spring will then be free from the shoe-operating devices. I accomplish this adjustment of the trip or detent by a manually-operative lever P, which projects above one end of the platform and has a horizontal rock-shaft *p* journaled in a suitable bearing *q* on the platform or guides *h*, the inner end of this rock-shaft having a right-angled arm Q, which is arranged in the path of the inclined or cam surface *k* on the trip or detent. In backing the train the lever P is operated by hand to turn the rock-shaft and force the arm Q in the path of the cam *k* on the trip, and when the draw-bar is moved rearward by the draw-heads abutting together after the train is started the trip or detent moves with the draw-bar and its cam or incline *k* rides upon the arm Q, which operates to elevate the trip or detent sufficiently for its abrupt shoulder *j* to clear the projection *o* on the operating-lever, thus relieving said lever of the pressure of the spring and allowing the shoes to remain free from contact with the wheels of the truck.

Having thus explained the nature of my invention, the operation thereof may be briefly described as follows: When the car is at rest, the draw-head and the draw-bar are forced outward to such a position by the cushion-spring that the shoulder on the trip is held in engagement with the projection *o* on the operating-lever and the latter is actuated to hold the brake-levers in position to apply the shoes against the wheels, thus holding the car in check so long as it is at rest. When the car is started, the brake-shoes are released from the strain or pressure of the spring and they fall away from the wheels, because the draw-bar is pulled outward by the car to which it is coupled, and thus the detent is moved with the draw-bar, so that its abrupt shoulder *j* does not engage with the projection *o* of the operating-lever. To back the train on a level grade, it is desirable to release the shoes from contact with the wheels, to accomplish which I operate the lever P, so as to throw the arm Q in the path of the cam or incline *k*, so that when the draw-bar is moved rearward under the impact of the other car the trip I moves with said draw-head and its

cam *k* rides on the arm Q, thus elevating the trip and causing its abrupt shoulder to clear the projection *o*, thus relieving the shoes of the tension of the spring and permitting the train to be backed with ease. In descending mountain-grades or other steep grades it is desirable to apply the shoes against the wheels with very great force to prevent the car from moving too rapidly and to relieve the strain on the engine-brakes as much as possible, and I accomplish this end by utilizing the backward pressure of the train on the draw-bar in conjunction with the pressure of the coiled spring on the draw-bar. By moving the lever P so that its arm Q is out of the path of the incline *k*, as in Fig. 2, it is obvious that the draw-bar can be moved rearward under the backward pressure of the train and that such rearward movement of the draw-bar will be applied to the trip or detent and the operating-lever in such manner that the brake levers and shoes will be forced with great pressure against the wheels to retard the same and prevent the train from moving rapidly.

I am aware that changes and alterations in the form and proportion of parts and details of construction of the mechanism herein shown and described as an embodiment of my invention can be made without departing from the spirit or sacrificing the advantages of my invention, and I therefore reserve the right to make such modifications as fairly fall within the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic draw-bar brake, the combination, with an endwise movable draw-bar, of a trip pivoted to said draw-bar and movable longitudinally therewith, a brake-lever arranged to be normally moved by said trip or detent, and a manually-operated lever having a part extending in the path of said trip or detent and forming a bearing therefor, whereby said detent can be freed from engagement with the brake-lever by said manual lever, as and for the purpose described.

2. In an automatic draw-bar brake, the combination, with a brake-lever and a spring-cushioned draw-bar, of a trip or detent pivoted to and movable with the draw-bar and having the abrupt shoulder and the incline or cam, an operating-lever arranged in the path of the shoulder on said trip and connected with the brake-lever, and a hand-lever having an arm adapted to be adjusted in the path of the cam on said trip, substantially as and for the purpose described.

3. In an automatic draw-bar brake, the combination, with a brake-lever and an endwise-movable draw-bar, of a spring associated with said draw-bar, a trip or detent connected to and movable with said draw-bar and having the abrupt shoulder at its rear end, and an operating-lever provided with a projection against which the abrupt shoulder bears, substantially as and for the purpose described.

4. In an automatic draw-bar brake, the combination, with a brake-lever and an endwise-movable draw-bar, of a spring associated with said draw-bar, a pivoted trip or detent movable with said draw-bar and having the incline or cam, an operating-lever arranged to be operated by the trip or detent and connected to the brake-lever, and a rock-shaft having a hand-lever and an arm adapted to be adjusted in the path of the cam or incline on said trip to permit the latter to be elevated by the arm and thereby disconnected from the operating-lever, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ENOCH FARNSWORTH.

Witnesses:

JOS. FORREST,

JOSEPH R. EDSON.