

C. B. EATON.

Improvement in Railway-Car Brakes.

No. 116,169.

Patented June 20, 1871.

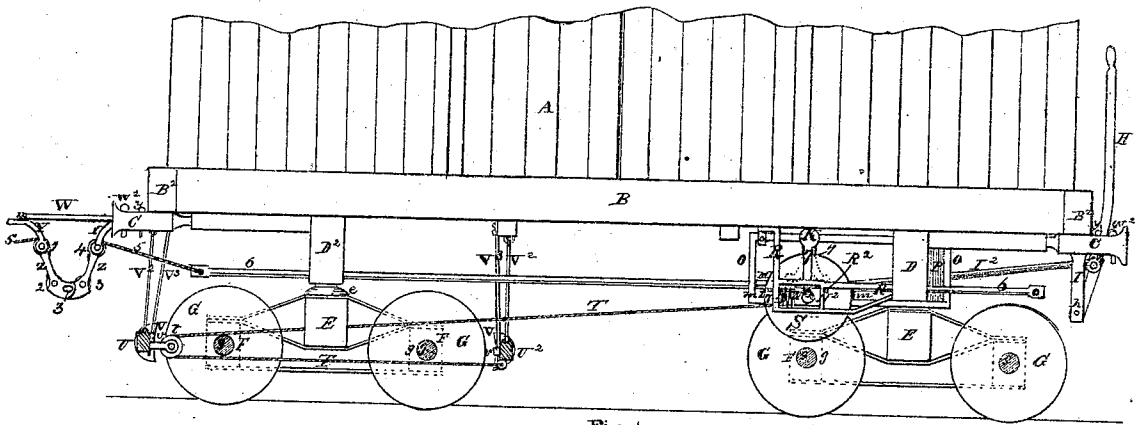


Fig. 1.

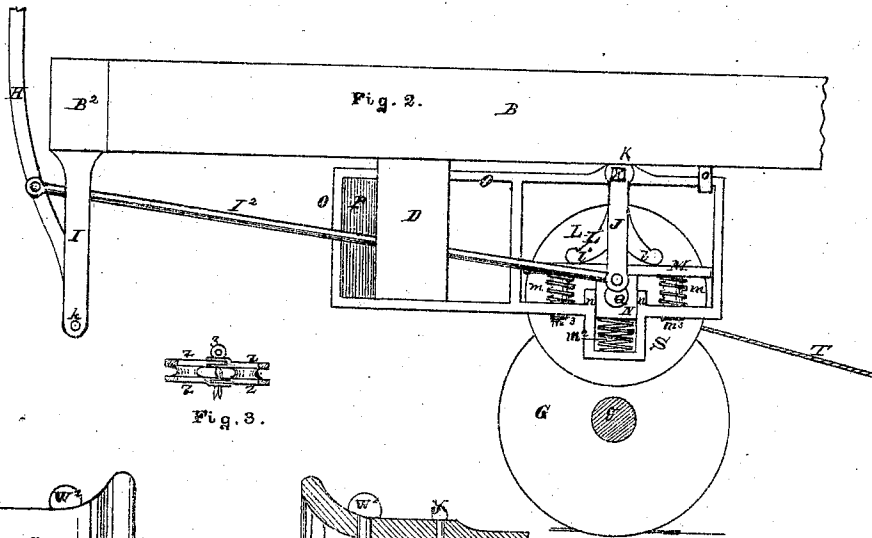


Fig. 3.

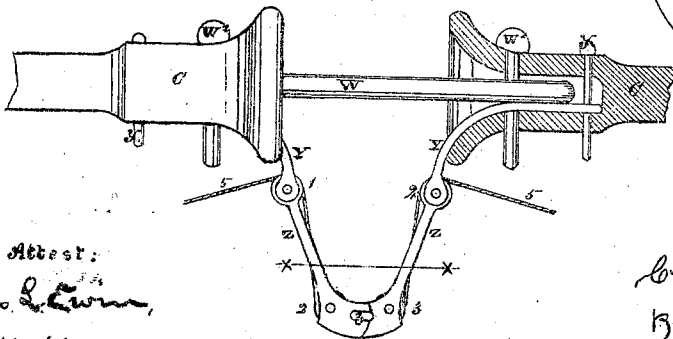


Fig. 4.

Attest:

Geo. L. Linn
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Inventor

Charles B. Eaton
By Wright Bros. Atty.

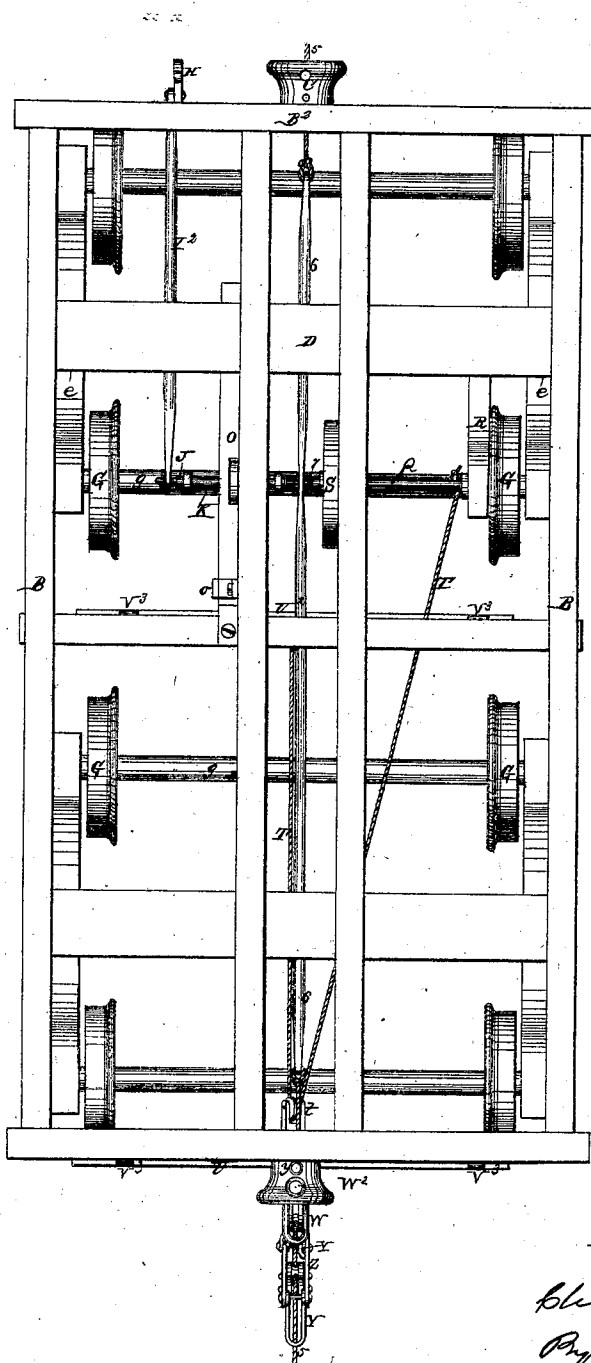
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Fig. 5

Patented June 20, 1871.



Attest:
Jas. L. Ewin
Walter Allen

Inventor

Chas. B. Eaton
By *[Signature]*
[Signature]

UNITED STATES PATENT OFFICE.

CHARLES B. EATON, OF GRAFTON, ILLINOIS.

IMPROVEMENT IN RAILWAY-CAR BRAKES.

Specification forming part of Letters Patent No. 116,169, dated June 20, 1871.

To all whom it may concern:

Be it known that I, CHARLES B. EATON, of Grafton, in the county of Jersey and State of Illinois, have invented a new and useful Brake for Railroad Cars, of which the following is a specification.

Nature and Object of the Invention.

My invention relates to that class of brakes which is operated by means of a cord wound upon a pulley, which is brought in contact with a running axle; and it consists in the means by which the pulley is brought in contact with the axle, or a pulley thereon. One end of the friction-pulley shaft is caused to descend by means of a biped cam, operated by a series of cords and metallic rods running the length of the train. A toggle arrangement prevents the cords becoming slack as the cars approach each other. It also consists in the hanger-frames supporting the shaft being so arranged that the shaft may have a side movement, to remove the friction-pulley from hard contact with the axle when the strain upon the brake-chain is too great, so as to be in danger of causing breakage.

Description of the Drawing.

Figure 1 is an elevation of a railroad car, a portion being removed to exhibit the brake apparatus. Fig. 2 is an elevation of a portion of the brake, showing the opposite side to Fig. 1. Fig. 3 is a top sectional view at the line *x x*, Fig. 4, of the coupling of the toggle. Fig. 4 is an enlarged side view of the two draw-heads, with the toggle arrangement for preventing the slacking of the cords when the cars approach each other; one draw-head being shown in axial section. Fig. 5 is a plan view.

General Description.

A is the car-body, and B the sills or side timbers; C, the draw-heads, and D D² are bolsters resting on the center bearings *e* of the truck-bolsters E. F are the axle-boxes, shown in dotted lines. G are the wheels; and *g*, the axles. H is a lever of the second order, whose lower end is fulcrumed at *h* to the bracket I, depending from the cross-tie B². The lever H is connected, by a rod, I², to the lower end of an arm or crank, J, upon the shaft K. L is a

cam attached to the shaft K, and having two feet, *l* *l'*, which rest upon the bar M, which is supported by three springs, *m*, *m*, and *m*², the latter of which is, beneath a journal-box, N, attached to the lower side of the bar M, and having vertical movement between the guide-bars *n*. *m*³ are guide-rods to keep the bar M horizontal during its vertical movement by the action of the cam L and springs *m* *m* *m*². O is a frame, supported in the bolster D at one end, and by a stirrup or strap, *o*, at the other end, and held in the position shown by the rubber or other spring, P, but having a limited end motion, for a purpose to be hereafter explained. Q is a shaft turning in the journal-box N, and in the journal-box N². (See Fig. 1.) The box N² is supported by and turns to a slight extent on a pin, R². It also slides on the pin —, a spring, *r*, tending to hold it in the position shown. R is the hanger-frame of the box N². The shaft Q carries a friction-pulley, S, which, when the box N is depressed by the cam L, is brought in contact with the axle *g*, (or a friction-pulley thereon,) and causes the shaft Q to rotate. The rotation of the shaft Q winds up the wire rope or chain T, which may be connected to the usual brake-levers now used upon a car, or may act by means of pulley-blocks, one of which is shown at *t*, the rope passing through the block, and its end being attached to the brake-bar U². V are the brake-shoes; V², the links by which the brake-bars U U¹ are suspended; and V³, the springs by which the brake-shoes are forced away from the wheels on the slackening up of the chain or rope T. The springs V³ pass through staples or straps *v*, to prevent end movement of the brake-bars. W is the link, and W² the coupling-pin. Y are the pulley-links or brackets, which are secured in the draw-heads by means of the coupling-pins W², and an additional pin, *y*, and lie beneath the coupling-links in the draw-heads. To the ends of the hanger-brackets Y are pivoted toggle-bars Z, coupled together by a pivot-pin, *z*, which is split and expanded near the end so as to prevent its falling out, though permitting its easy introduction or removal. One of the toggle-bars upon each draw-head is forked, to receive the single end of one of the bars upon the draw-head of the next car, as seen

at Fig. 3. For instance, supposing the toggle-bar upon the right-hand side to be forked in all cases, it would receive the single end of the left-hand bar of the toggle upon any other draw-head, the pulleys being presented opposite each other. At the upper and lower end of each pair of toggle-bars, and turning between the bars, are pulleys 1 2 3 4, a section of cord, 5, passing over one beneath 2 and 3 and over 4, and being attached or coupled at the ends to sliding rods 6 extending nearly from end to end of each car. The rod 6 slides freely in the bolsters, and is connected by a wrist-pin to the crank-arm 7, attached to the shaft K. The cord 5 may have a detachable coupling between the pulleys 2 and 3, or may be detachable from the ends of the rods 6. In uncoupling the cars the pivot-pin *z* is drawn out, and one-half of each toggle left hanging from each draw-head, the pin being left in one of them, or a pin may be suspended from each side of the toggle by a chain.

The operation of the brake is as follows: The car shown may be supposed to be a baggage-car, or that nearest to the engine, and the lever H is operated from the tender, or, by the attachment of a cord to its upper end, may be operated from the engine. When the upper end of the lever is drawn outward from the car the shaft K is caused to turn, and the cam L depresses the box N and brings the friction-pulley S in contact with the axle, (or a pulley thereon,) and the shaft Q is caused to rotate. This draws up the cord T and puts on the brakes. As the shaft K is turned, the crank-arm 7 slides the rod 6, which acts on the cord 5, and communicates motion to a similar rod and brake apparatus on the next car, and so all through the train. The toggles Z are connected by the pin *z* at such a point that, as the cars approach or recede, the cord retains always an equal tension, or rather does not

become loose as the cars approach, and so that the brake acts equally well whether the cars are in contact or separated to the extent of the links. The brakes are shown in the drawing as applied to but one of the two trucks, but may be applied to all the wheels if desired, either by attaching an additional rope or chain, T, to the shaft Q, or by the addition of one or more pulley-blocks attached to the brake-bars, as at *t*, Fig. 1. The single rope T may be made to operate on all the brakes, or the rope or ropes T may be connected to the ordinary brake-levers. If the rope T is wound upon the shaft Q with too great force, so as to bring an undue strain upon the brakes, the frame O and the box N¹ are drawn in a direction away from the bolster D, so as to lessen the friction between the pulley S and the axle *g*, thus allowing them to slide on each other, and preventing the fracture of any part of the apparatus. The springs P and *r* allow this movement of the frame O and box N²; but on the tension of the rope T being sufficiently relieved the springs still maintain the contact of the pulley S and the axle, so as to keep the brakes in operation.

Claim.

I claim as my invention—

1. The lever H, rod I², cranks J, shafts K and Q, cam L, friction-pulley S, and rope or chain T, arranged substantially as and for the purpose described.

2. The sliding frame O, frame R, and sliding box N², in combination with the springs P and *r* and tilting-shaft Q, substantially as and for the purpose described.

In testimony of which invention I have hereunto set my hand.

Witnesses: CHARLES B. EATON.

SAML. KNIGHT,
STEPH. BERNARD.