

J. B. PELTON.
Railway-Car Brakes.

No. 157,866.

Patented Dec. 15, 1874.

Fig. 1.

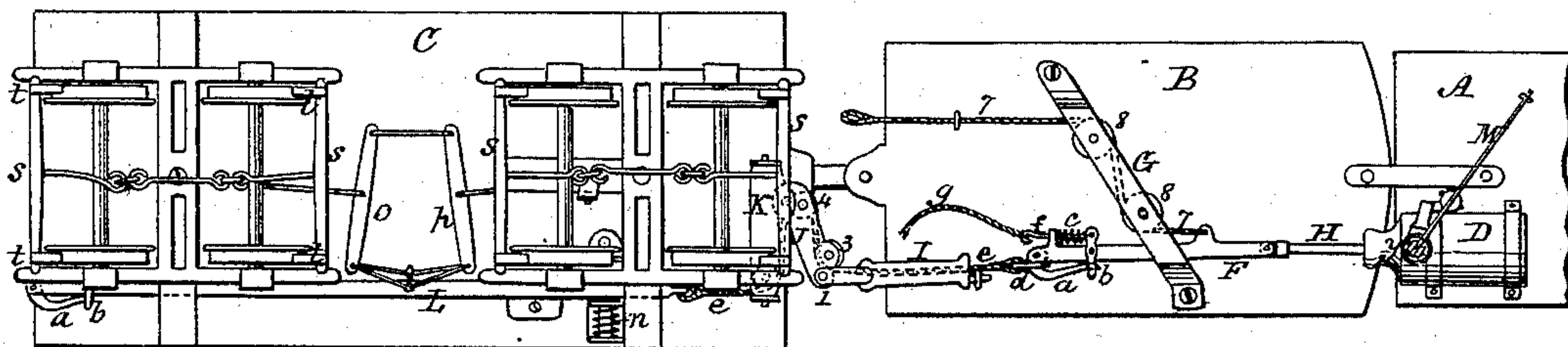


Fig. 2.

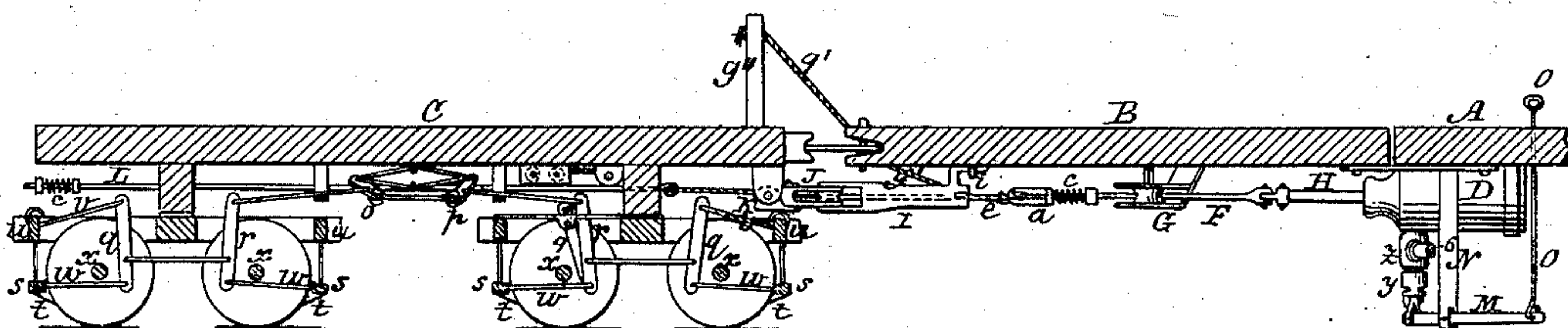


Fig. 3.

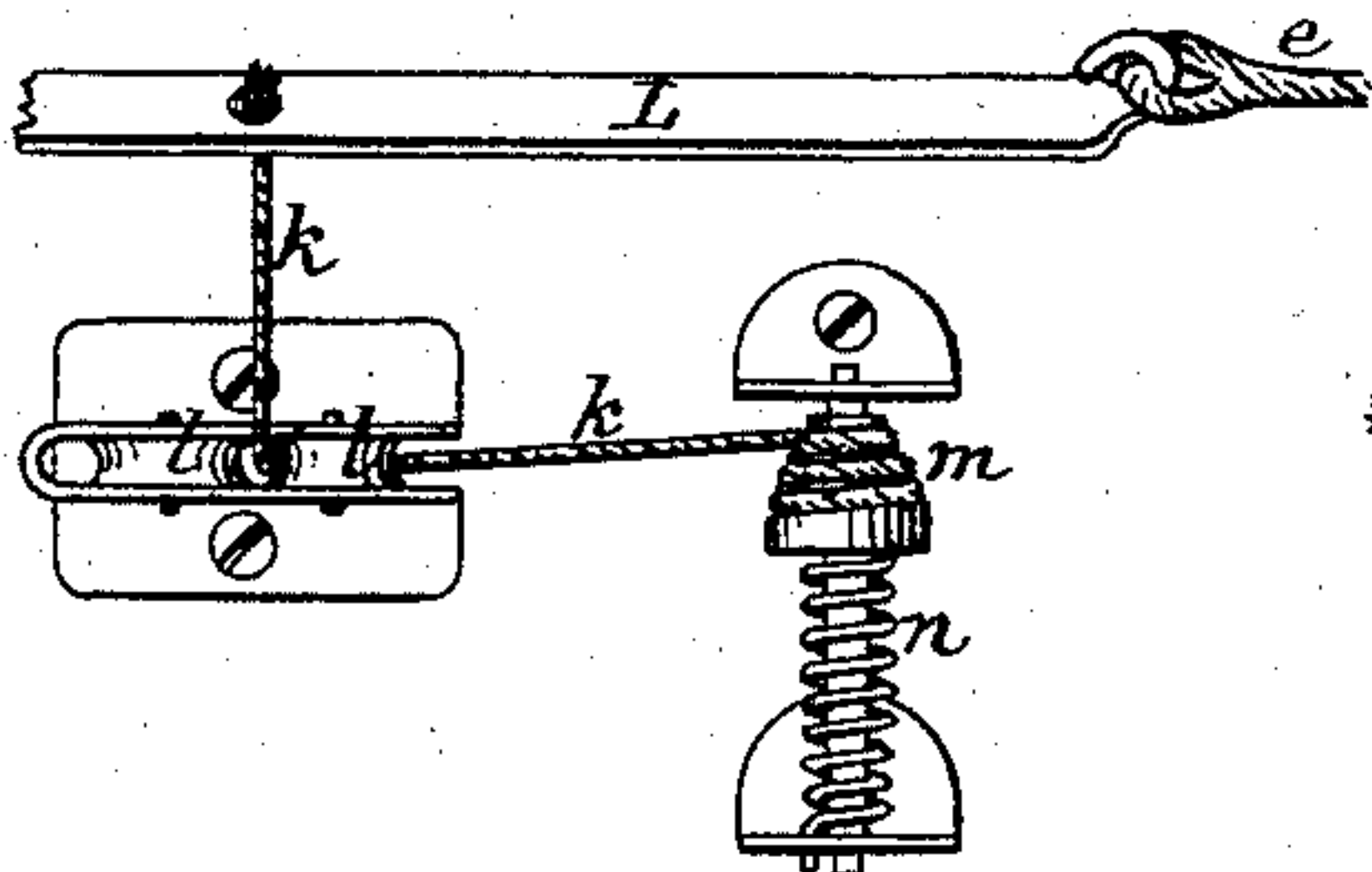


Fig. 4.

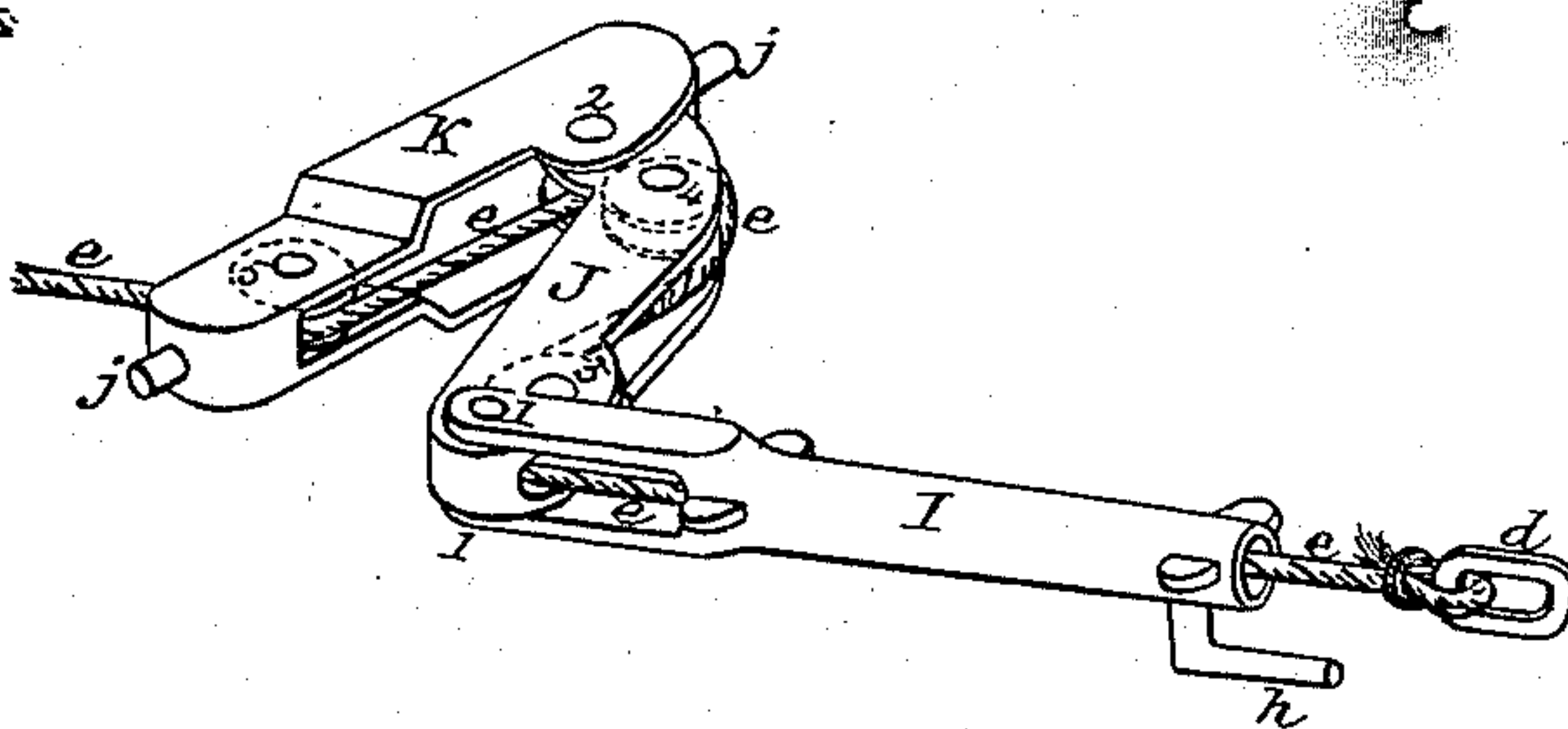
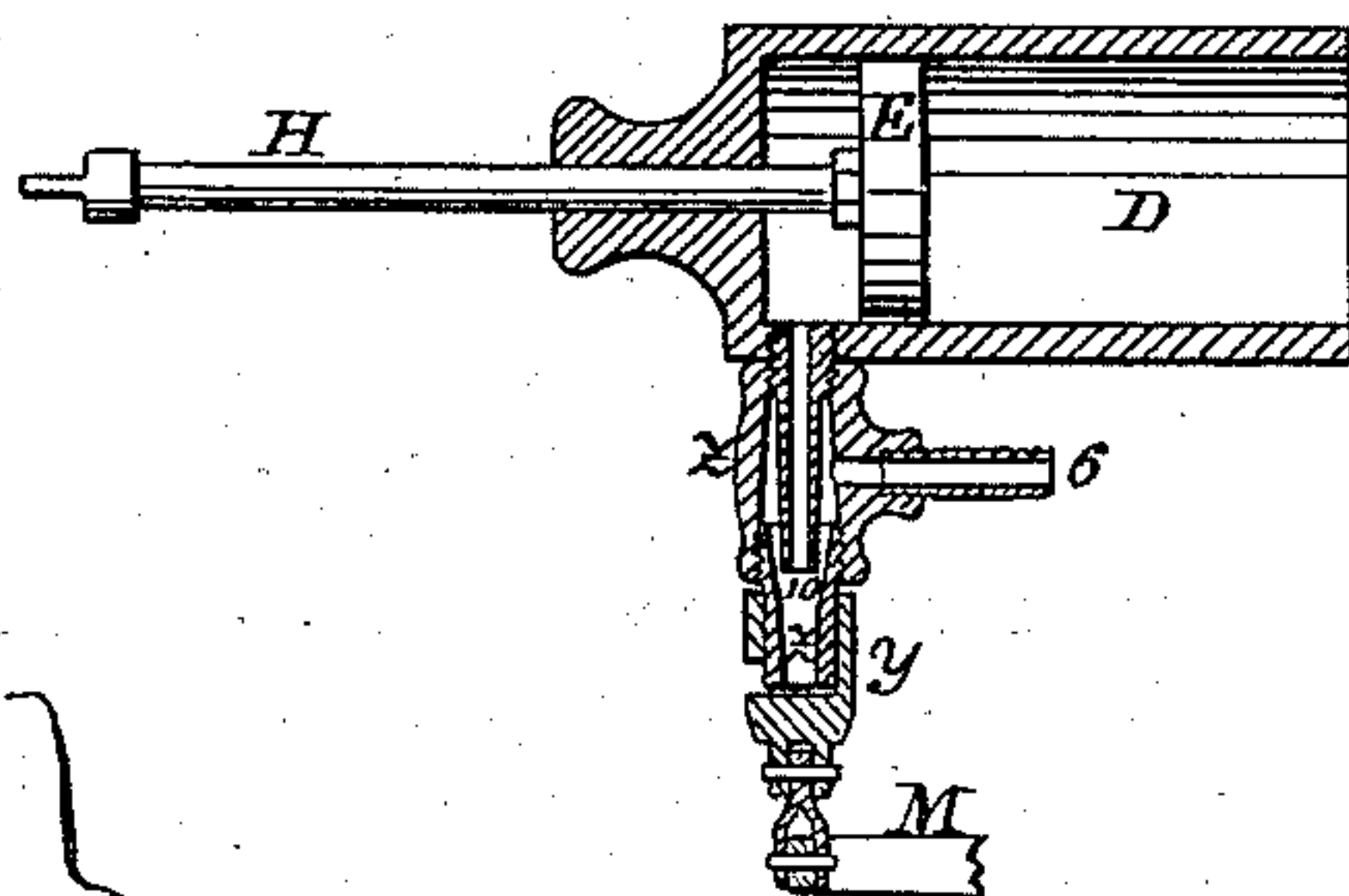


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES B. PELTON, OF MOUNT PLEASANT, MARYLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN DILLER, OF SAME PLACE.

IMPROVEMENT IN RAILWAY-CAR BRAKES.

Specification forming part of Letters Patent No. 157,866, dated December 15, 1874; application filed October 24, 1874.

To all whom it may concern:

Be it known that I, JAMES B. PELTON, of Mount Pleasant, in the county of Frederick and State of Maryland, have invented a new and useful Improvement in Brakes operated by steam; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 represents a view of the under side of a locomotive, tender, and car with my brake arranged thereon. Fig. 2 represents a sectional side elevation of the same. Figs. 3, 4, and 5 represent as detached, and on an enlarged scale, certain parts of the brake mechanism which will be hereinafter more particularly referred to.

In the patent granted to me 18th November, 1873, No. 144,787, are represented some of the devices or mechanisms shown in this present application. These, of course, I lay no claim to in this application.

My present invention relates to certain improved devices or mechanisms, which adapt this kind of brake to certain conditions of the cars or train on which they are used, and render the brake more certain and reliable in practical operation; and my invention consists, first, in pivoting the pulley-holders to the car, so that in addition to the longitudinal motion of the pulley-holders, without slacking up the cord or rope, they may also rock or roll in a vertical direction to admit of the coupling of cars of different heights of platforms; and my invention further consists in a fusee and spring arrangement, connected to and with the brake bar or rod, and with the piston of the steam-cylinder, for equalizing the power of the spring in returning the brakes to their normal condition, after they have been applied to the wheels; and my invention further consists in combining, with the brake-applying mechanism, a connecting and a self-disconnecting device for readily connecting and disconnecting the cars that make up a train.

I will proceed to describe the same with reference to the drawings, in which—

A represents the locomotive; B, the tender;

and C, one of a train of passenger or other cars, of which there may be any suitable number. The steam-cylinder and piston therein, for applying the brakes throughout the train, are more distinctly shown at D E, Fig. 5, and are arranged underneath the locomotive, so as to bring them in or near the line in which the power is applied to the brakes. The steam-cylinder has one of its ends open, the power being applied in but one direction, and thus avoiding slide-valves and complicated steam-passages. Underneath the tender B there is a brake-bar, F, which moves through a guide-piece, G, fastened to said tender, and the forward end of this brake-bar is flexibly connected to the end of the piston-rod H, so that it may not, by the swaying of the locomotive or tender, cramp or injure said piston-rod. On the rear end of the brake-bar F, there is a coupling and uncoupling device, composed of a hinged tongue, *a*, a lever-hook, *b*, and a coiled or other spring, *c*. A ring, loop, or link, *d*, (more distinctly seen in Fig. 4,) on the end of the rope or chain *e* is passed over the tongue *a*, and the lever hook or lock *b* is drawn over the point of the tongue, as seen in Fig. 1. This firmly connects the brake-bar F with said rope or chain *e*. To the tail end of the hook or lock *b* there is fastened a rod, *f*, around which there is a spring, *c*, and to the end of the rod there is fastened a cord, *g*, which may extend up and be fastened to the railing or side or end of the car. When it is necessary to uncouple the cars to break up the train, it is only necessary to draw upon the cord *g*, which moves the lock *b* from the end of the hinged tongue *a*, and the engine and tender may be moved from the train. The spring *c*, when not otherwise influenced, tends to hold the lock to the tongue. The cord *g*, Fig. 2, fastened to the post or railing *g'*, at one end, has its other end fastened to the tube I, so that when the cars are uncoupled, the arms I and J may drop, but still be held by said cord *g*. The cord or chain *e*, behind its connection with the brake-bar F, passes into and through a hollow or tubular arm, I, which is connected to or with the car C, as will be hereafter explained, but said arm is guided and somewhat controlled by the tender B, as it has a bent

projection, *h*, upon it that moves in and through a loop or staple-guide, *i*, on the tender. The arm *I* is pivoted at 1, to a pulley-holding link or arm, *J*, and the opposite end of said pulley-holding arm is pivoted, at 2, to a second pulley-holder, *K*, which is connected to the body or frame of the car *C* by journals *j j*, so that it may rock or roll thereon, and raise or lower the arms *J* and *I*, as the case may be, when cars of differing heights of platform are to be coupled together. In the arm *J* there are two pulleys, 3 4, and in the roller-piece *K* there is one pulley, 5. It will be perceived that, by pivoting the arms *I* and *J* together, and the latter to the piece *K* at points conforming to the perimeters of the pulleys over and around which the cord or chain *e* passes, however much the arms *I J* may elongate or contract, and however much the piece *K* may rock or roll upon its journals, the cord or chain will always be uniformly taut, and never slacken, and thus the cars may have any reasonable lateral and vertical motion, without interfering with the uniform action of the brake-applying mechanism.

After the cord or chain *e* passes the last pulley, 5, it is fastened to a brake-bar, *L*, attached to the under side of the car *C*, but so that it may have longitudinal motion to apply and release the brakes, as may be required. To this bar *L* is fastened a cord or chain, *k*, Fig. 3, which passes over or around a pulley, *l*, and thence on and around a fusee, *m*, to which it is fastened. This fusee *m* is connected with a coiled spring, *n*, which it winds up, as the cord *k* unwinds from the fusee, by the moving of the bar *L*, and, as the spring becomes stronger as it is wound up, the leverage upon the fusee becomes greater, and thus one is compensated for by the other, and the power made more uniform.

When the steam is let out of the cylinder the unwinding of the spring *n* aids to restore the brakes to their passive condition, and ready to be again applied, at any moment, by moving back the bar *L*.

The brake-blocks, levers, and connecting-rods are shown in the drawings; and I only deem it necessary, in connection with these parts, to state that the levers *o p* are connected, by cords or chains, to the moving bar *L*; that these levers *o p* are connected with the levers *q r* by rods; and that these latter are connected to the bars *s*, on which the brake-blocks *t* are attached, so that the moving of the bar *L*, by the action of the steam upon the piston *E*, applies the brakes to the wheels, and will do so throughout a train of cars provided with devices similar to those on the car *C*.

At the rear end of the car *C* are shown the coupling devices *a b*, by which the next or second car is connected and operated, and so on throughout the train.

The brake-levers *q r* stand in a vertically-inclined position, and the upper ends of those *q* are connected to the truck-beams *u* by rods

v, which latter may be adjustable in the truck-beams, so that the inclination of the levers can be changed, and cause the brake-blocks *t* to come tight up against the wheels should they become worn by hanging and touching the perimeter of the wheels at only one point—a thing they are likely to do; and, by thus arranging the levers *q r*, the rods *w*, that connect their lower ends with the beams or bars *s*, which carry the brake-blocks *t*, can be straight, and pass under the axles *x*, while heretofore these rods had to be bent to pass the axles.

The cap-valve *y*, for directing the steam to the piston-head *E*, is slotted, and fits over the end of the steam-pipe *z*. This valve has connected with it a lever, *M*, pivoted to a down-hanger, *N*, and from the end of the lever *M* a rod, *O*, extends up to the platform or stand that the engineer or the attendant occupies, so that he may apply or let off the steam as may be required. A steam-pipe, 6, connects with the boiler or steam-dome of the locomotive, and furnishes steam to the cylinder *D*.

When the cap-valve *y* is drawn tight up against the end of the steam-pipe *z* by the lever and rod *M O*, then the steam passes into the cylinder *D* and moves the piston-head *E*, and so applies the system of brakes. When the cap-valve is lowered from the steam-pipe *z*, the steam from the cylinder will escape through the pipe *z* and the slots or openings through the cap-valve, and the atmospheric pressure upon the other side of the piston-head will move said head back again, and so release the brakes.

A cock of any kind may be applied to the steam-pipe 6 to shut off or let on the steam from the boiler of the locomotive.

The cord and pulleys shown at 7 and 8 on the tender *B* are for the purpose of coupling the brake mechanism when the cars are changed end for end. The levers *q r*, as shown in the front truck, Fig. 2, are connected to the truck-frame by adjustable down-hangers 9, which not only prevent the shackle motion of said levers, but admit of their being adjusted so as to raise or lower the brake-blocks, and change their wearing-surfaces, upon their respective wheels, as said surfaces become worn away.

Within the steam-pipe *z* there is a nozzle, 10, which projects beyond the steam-inlet pipe 6, and has steam-space around it. When the valve *y* is opened the steam, entering through the pipe 6 and escaping past the nozzle 10, tends to draw the steam from the cylinder and create a vacuum therein, and this vacuum aids the atmospheric pressure upon the opposite side of the piston-head in moving back the brake-applying apparatus and brakes.

Having thus fully described my invention, what I claim herein as new, and desire to secure by Letters Patent, is—

1. In combination with the hinged arms *I J*, the rocking or rolling pulley-holder *K*, to op-

erate so that while the arms I J may be elongated and moved laterally in conforming to the swaying motion of the cars they can also be raised up or let down to be adapted to cars of varied heights of platforms, substantially as described and represented.

2. In combination with the bar L, to be moved by the power of steam to apply the brakes to the wheels by intervening mechanisms, the cord, fusee, and spring, to aid in returning said bar to its inactive position when the brakes are thrown off, as described and represented.

3. The coupling device, consisting of the tongue *a*, lock *b*, spring *c*, and cord *g*, so that

by drawing upon the cord the cars or engine may be instantly disconnected, as described and represented.

4. In combination with the levers *q r*, the down-hangers 9, made adjustable on the truck-frame for shifting the brake-blocks to change their points of frictional contact upon the wheels, as and for the purpose described and represented.

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Witnesses:

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