

J. E. WORTHMAN.

Car-Brakes.

No. 133,913.

Patented Dec. 10, 1872.

Fig. 1.

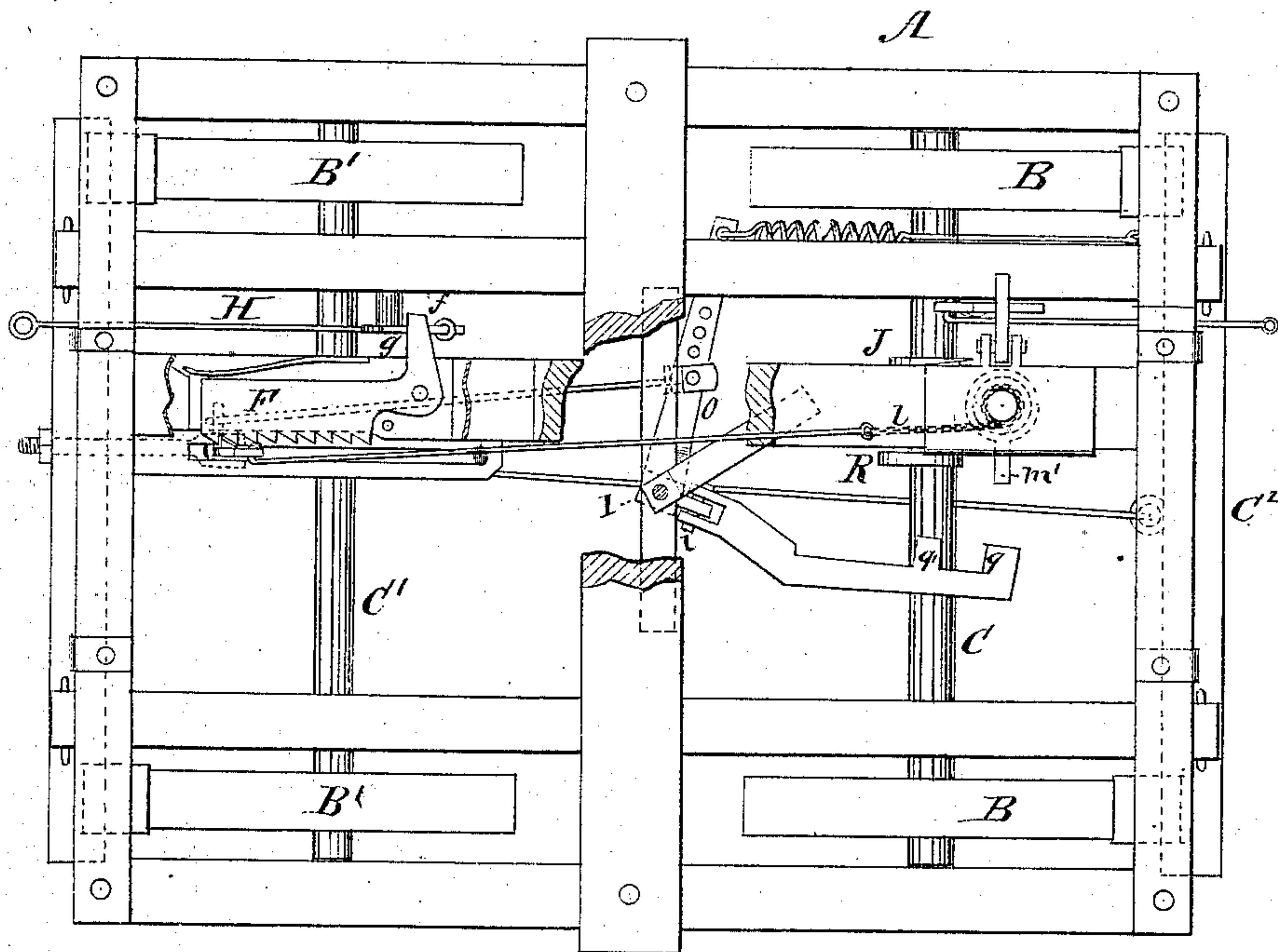


Fig. 2.

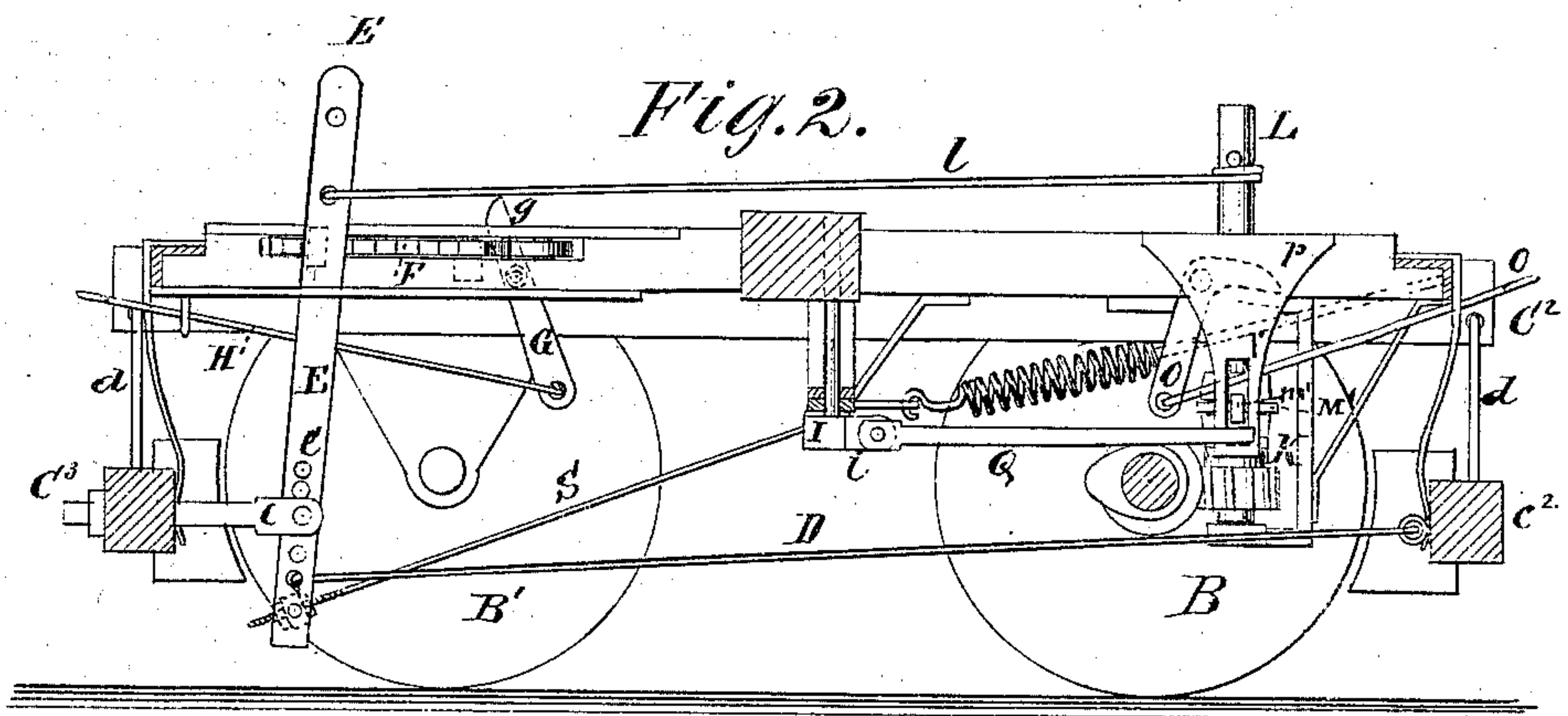


Fig. 4.

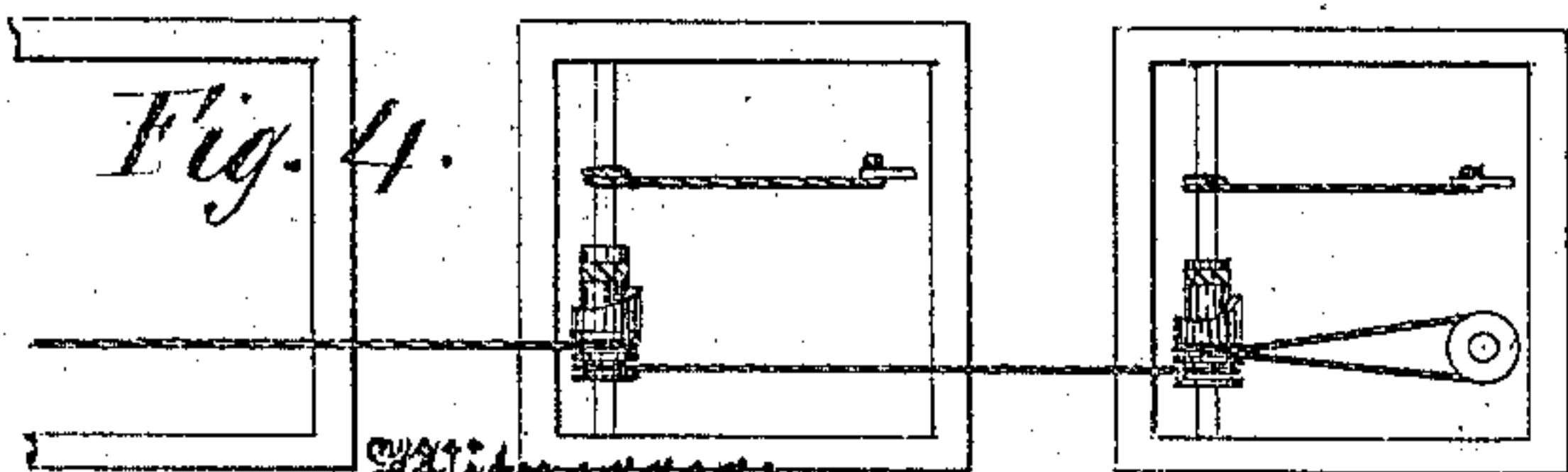
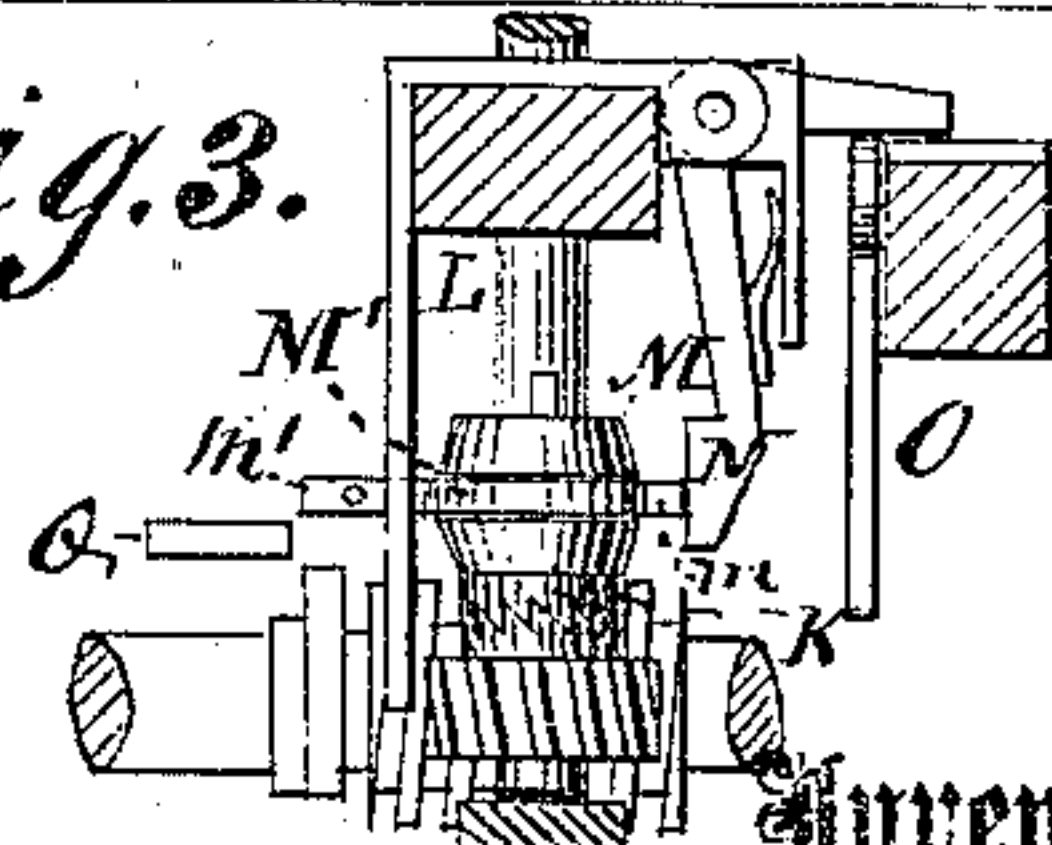


Fig. 3.



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JOHN E. WORTHMAN, OF MOBILE, ALABAMA.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. 133,913, dated December 10, 1872.

To all whom it may concern:

Be it known that I, JOHN E. WORTHMAN, of Mobile, in the county of Mobile and State of Alabama, have invented an Improved Car-Brake, of which the following is a specification:

The invention has in view to connect all the brakes of a train with a mechanism on the tender or on the truck of any car. It consists in the mode of tripping the spring-rack which locks the brakes, so that the latter will be at once allowed to assume a position out of contact with the wheels. It also consists in a novel mode of automatically ungearing a drum-winding pinion with an endless screw which rotates it, so that the brake-lever will be locked at a given point and the brakes operated with a given pressure. It also consists in a novel mode of regulating the time when the ungearing of said pinion from said endless screw shall take place, so that greater or less force may be applied. It also consists in the general method of operating all the brakes of a train of cars simultaneously and with a uniform force, as hereinafter fully described.

Figure 1 is a top view. Fig. 2 is a longitudinal section. Fig. 3 is a detached view of clutch and screw gear, and Fig. 4 shows the connection of several cars.

A represents the truck of a tender or car; B B', the wheels; and C C', the axles; C² is a brake-bar, having near each end a brake-shoe, c², which bears upon the periphery of the wheels B B'. This bar C² is attached by a connection, D, to a lever, E, that is pivoted in a projection, e, on a brake-bar, C³, of the other wheels. These bars C² C³ are attached to pendants d d', which are pivoted on frame of truck. F is a spring-pressed rack in which the lever E is locked, and which is provided with an arm, f. G is a lever whose short arm g bears against the rack-arm f and long arm is attached to a hand-connection, H. By pulling the latter the rack is withdrawn and a spring-retracted lever, I, allowed to throw the lever E forward and the brakes apart and off the wheels. The axle C is provided with a double endless screw, J, which works in a loose pinion, K, on the vertical windlass-shaft L. To the drum or upper part of this shaft L is attached a chain, L, which is connected with the brake-lever E. When the pinion is clutched to shaft L the axle C will

draw forward the upper arm of lever E and set the brakes against the wheels. M is a sliding clutch, provided with the ring M', in which the clutch turns, and which has the projection m, held by a catch-lever, N, which is itself released by means of the lever O and connection o. m' is an arm on ring M', and upon the opposite side to the projection m. It slides in the slot p of a rigid hanger, P, so as to prevent the said ring from turning with the clutch. Q is a cam-frame turning vertically on a pivot in the short arm i of spring-retracted lever I, and provided with the flat end q, which approaches the arm m' gradually after the brakes are put on, and finally passes under it. On axle C is placed a cam, R, over which comes, at the proper time, a stud or projection, q', of the pivoted frame Q.

By this construction and arrangement of parts, as soon as the clutch is thrown down and made to key the pinion to the upright shaft the axle C makes one revolution, applies the brake, causes the cam to raise the frame Q, which has gradually approached and come over it, throws up the clutch, and prevents any further strain upon the brake-bars. In order to increase the degree of power applied to the brakes the lever I is provided with a series of holes at different distances from its fulcrum, so that by moving the connection between it and lever E closer to or more remote from said fulcrum the frame Q will be moved more or less slowly, and thus allow the force upon brake-bars to be increased or diminished. According as this change is made the lifting-frame Q is brought sooner or later over the cam R and under the arm m', and in consequence the winding up of chain continues a longer or shorter time, and the power applied to brakes is greater or less. Connecting the shaft L with the similar brake mechanism of each car in a train by a cord, chain, or other suitable flexible connection enables the brake of each car to be applied simultaneously and with a uniform power. By connecting the rod, cord, or chain o with a bell-rope extending through all the cars, a passenger, in case of accident, can drop the clutch by pulling the cord, and thus apply the brakes.

Fig. 4 of drawing shows a modification, in which the shaft L is arranged horizontally and provided with winding-drum and sliding clutch,

as before, but with a driving-pulley operated from the axle. This is a mere change of position, which does not at all affect the principle of operation.

It is not necessary that the means for operating separately the brakes for each car should be dispensed with, and they may therefore be preferably retained.

The advantages to the public of these improvements are as follows: In passing down an incline with a long train of cars the steam is shut off the engine and the brakes applied to it before the brakemen of the several cars in the rear have put on their brakes. The consequence of this is that, the engine being checked while more or less of the train is still acting under the momentum previously acquired, there is an immense strain upon it, which tends greatly to lessen its durability. By operating all the brakes simultaneously I entirely remove this injurious effect upon the costly engine, and cause it to last at least five years longer. Again, the unavoidable tendency, under the present brake system, to check the different cars at different times is the principal reason why so frequently a part of the train runs off after the engine and another portion of the train has passed a given point. One of the front cars, where the most expert brakemen are always placed, will be checked up, while the others will be impelled with all their unchecked force against its rear. The consequence is that this front car, which is, as usual, rocking laterally more or less, is lifted up behind and caused to lose its position on the track. This is entirely obviated by my simultaneous train-brake. Again, if from any cause one of the cars switches off, the effect will be

at once to drop the clutch and close down the brakes on the whole train, so that the least possible damage will be done. The engineer is thus enabled to put on all the brakes himself, as well as others, but he only can release them, and thus he is not dependent upon signals to accomplish that object.

Where the clutch mechanism is used on a tender it may be easily and conveniently operated by a lever coming within reach of the engineer or fireman.

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

1. The rack-arm f and the short lever-arm g , combined to release the lever E from rack F , as and for the purpose described.
2. The clutch-collar M' having the projection m' , the pivoted frame Q having the projections q q' , and the cam R , combined to raise the sliding clutch M at the time and in the manner described.
3. The spring-separated levers E I provided with an adjustable intermediate connection, and combined, as described, with frame Q , so that it may be moved into place slower or faster, and thereby increase or diminish the force applied to all the brakes of a train.
4. The method of connecting all the brakes of a train and operating them simultaneously and with a corresponding force by a single brake mechanism located on the tender or one of the car-trucks, as and for the purpose described.

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Witnesses:

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