

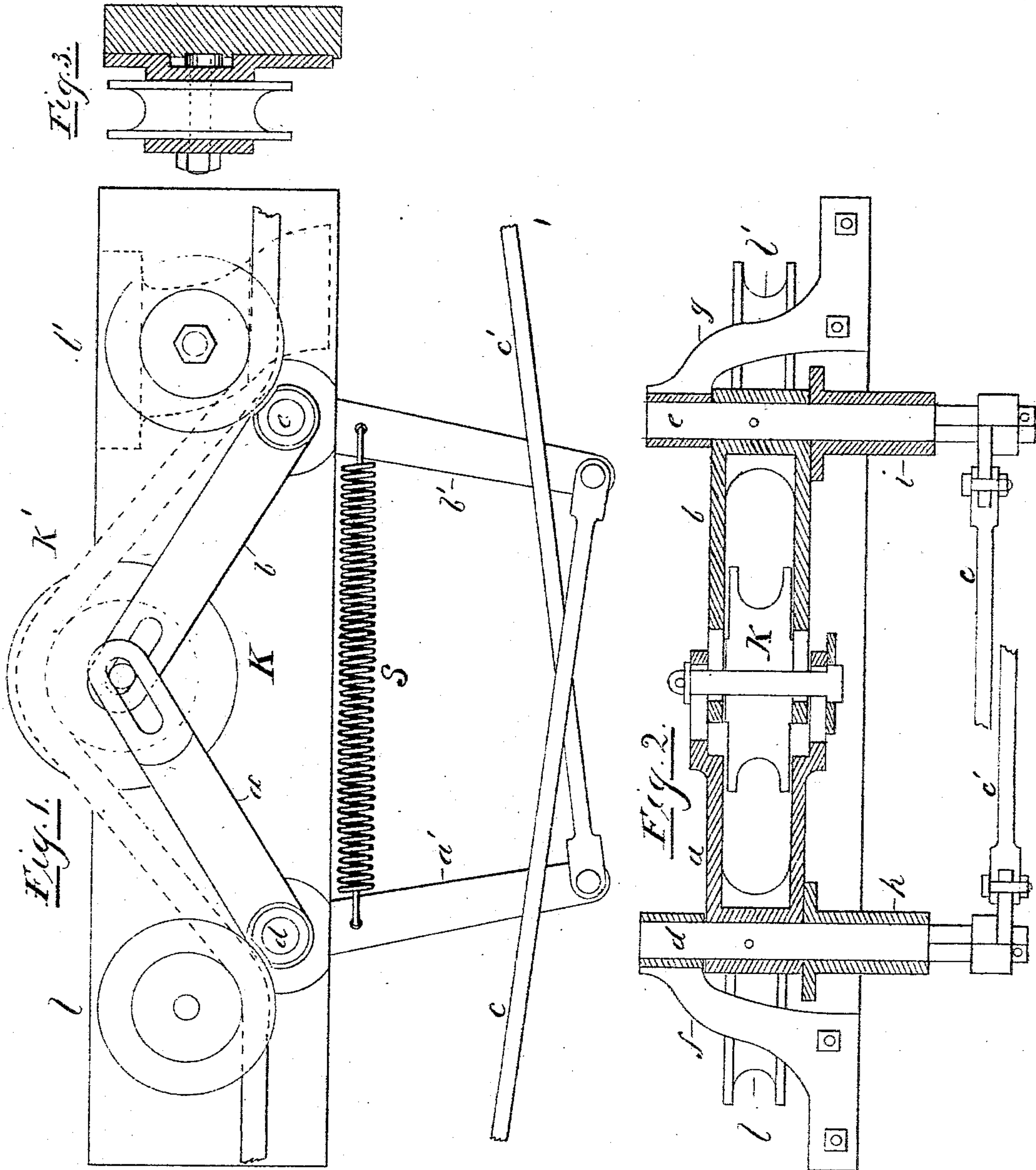
(No Model.)

2 Sheets—Sheet 1.

W. GILL.  
CAR BRAKE.

No. 321,432.

Patented July 7, 1885.



Witnesses  
John Elliott  
G. Elliott

Inventor  
William Gill

(No Model.)

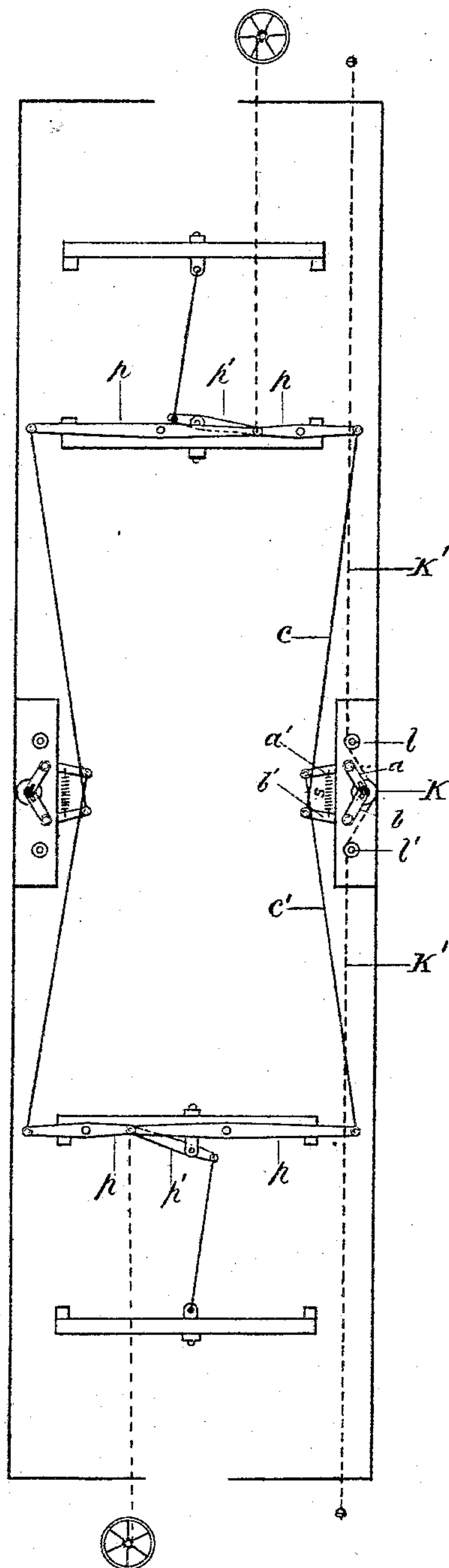
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Fig. 1. Patented July 7, 1885.



Witnesses

John Elliott

*John Elliott*

Inventor

*William Gill*



# UNITED STATES PATENT OFFICE.

WILLIAM GILL, OF TORONTO, ONTARIO, CANADA.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 321,432, dated July 7, 1885.

Application filed August 2, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GILL, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Brakes for Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has for its object the operation of those brakes which are attached to the several cars of a train, and is adapted to operate such brakes on a number of cars, so as thoroughly to control the long and heavy freight-trains without the brakemen going on the top of the cars for this purpose, as is the usual practice.

The device of which the principal parts of this invention are composed I call "the brake-worker," of which there are two placed underneath each car and in the middle thereof. It consists of three or more grooved pulleys of suitable diameters, the grooves thereof being of sufficient size to admit the links of a strong chain, with the lock-links to move freely. These pulleys are so placed and arranged that the chain which leads from the rear car to the steam-motor at the engine, in passing through the brake-workers, is thrown out of line from the position of the aforesaid pulleys, and on the chain being tightened by the steam-motor it is drawn to an approximately straight line, and in doing this it presses the middle pulley inwardly, and by the mechanism connected with this pulley—in being so pressed—will press the brakes on the rims of the car-wheels.

The mechanism referred to consists of two arms placed nearly at right angles, the first arm reaching from the center pivot of the middle pulley to an upright axle at some distance, and inwardly from the center of said middle pulley. The second arm is somewhat longer than the first, and reaches from the aforesaid axle still farther inwardly, and to which second arm the rod for working the brake-lever is attached. These arms, thus connected to the upright axle, form what is technically known as a "bell-crank," of which there are two in each device, one for operating the brakes of the forward truck and the other for operating the brakes of the rear truck.

In the accompanying drawings, Figure 1 is a plan view of the brake-worker. Fig. 2 is a

sectional elevation thereof. Fig. 3 is a side view of one of the smaller pulleys, placed in a cast-iron bracket and to be adjustable in either direction, as may be required, for regulating the throw of the brake-worker arms. Fig. 4 is a plan view of the brake-worker as placed underneath the bottom of a car, one on each side, and the mechanism connected therewith.

Similar letters of reference indicate the same parts in all the views as in this specification.

K represents the main pulley, which, by means of the chain K' being tightened, presses inwardly the arms *a* and *b*, and simultaneously the arms *a'* and *b'* are pressed apart, which arms are connected with the brake-levers *p p* by the rods *c* and *c'*, which operate the same, as also the lever *p'*, directly attached to the brakes. The spiral spring *S* when the arms *a'* and *b'* are pressed apart will be extended in length, by which it receives sufficient tensional force to bring the said arms *a'* and *b'*, as also the arms *a* and *b*, with the pulley K, back to their normal position, and be again ready for another application, and so on from time to time, as required. The axles *d* and *e* have their lower ends of a square form to receive the arms *a'* and *b'*, which are adjustable vertically thereon. *f* and *g* are cap journal-boxes for giving additional stability to the axles referred to, if required. *h* and *i* are socket journal-boxes of the aforesaid axles. *l* and *l'* are the side pulleys, adjustable laterally in slots, which form an important part of the brake-worker in receiving the outward pressure of the chain K' when operating the brakes. The main chain, K', is composed of separate lengths for each car, and united with lock links or hooks at each end, which hook into each other when taking out or adding cars at stations during the trip. These lock links or hooks are made to pass through the pulleys when necessary. Each car is provided with its own chain, and is reversible from one side of the car to the other, as occasion may require from its position on the track. The back or rear length of chain will be attached to back end of a compression-spring secured on the rear car to counteract any undue shock from a too sudden start of the motor, which latter is provided with a blow-off valve set at a pressure under the breaking strength of the chain. The pulleys *l* and *l'* are made adjust-



able in both directions. By a slightly different form of the arms *a* and *b* the chain *K'* may be made to act on the opposite side of the pulley *K* and produce the same effect. One pattern will suit both arms, placing one above the other.

It will be observed that in using this brake-worker there will be little additional trouble in taking out or adding on cars during the trip.

10 The steam-motor which is to operate the brake-workers is composed of a rotating cylinder with a stationary axle, and attached thereto are a hub, disk, and piston, all stationary, and through which the live steam from  
15 the boiler passes into the interior of the cylinder, and, acting upon a propeller which revolves with the cylinder, the motor is propelled in either direction as required. When  
20 steam is acting on one side of the propeller, the steam on the opposite side is escaping to the atmosphere, which device is fastened to and

underneath the foot-board of the engine, and for which device and its connections to the steam-boiler I obtained a patent in the United States, No. 232,812, entitled "Brakes for Rail- 25 way-Cars," and dated October 5, 1880.

Having thus described my invention, I claim—

In a brake-worker composed of the pulleys *K l l'*, arms *a b*, axles *d e*, journals *f g h i*, provided with any suitable journal-boxes, and the 30 arms *a' b'*, the combination of the common chain, constructed in sections, and lock-links at each end for operating the brake-workers, the rods *c c'*, and levers *p p'*, the whole con- 35 structed and operating substantially as described, and for the purposes set forth.

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Witnesses:

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