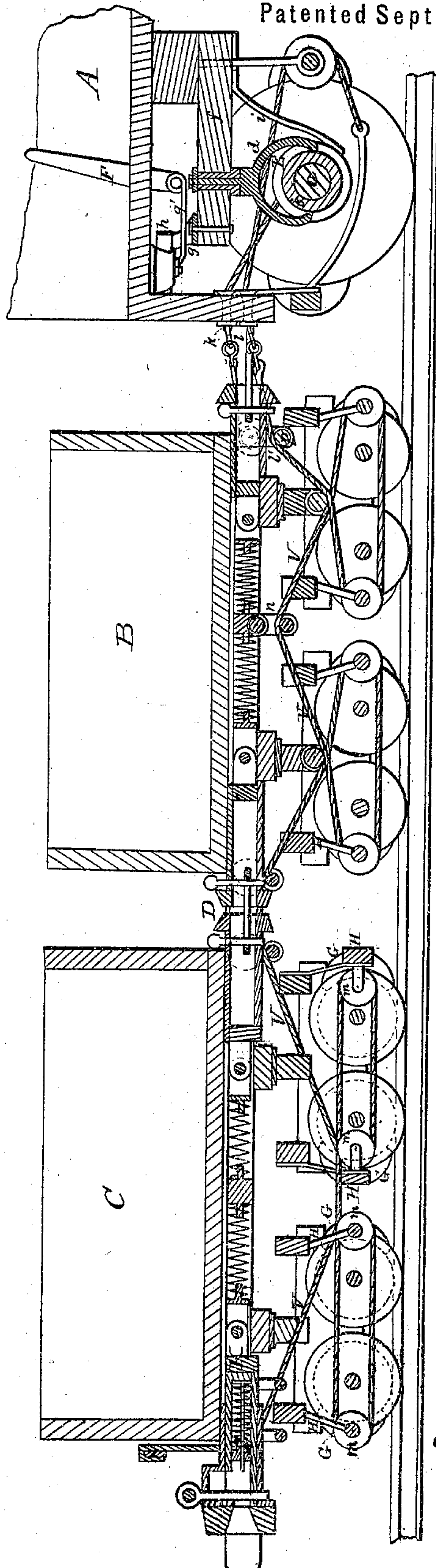


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Car-Brakes.

No. 143,187.

Patented September 23, 1873.

Fig. 1.



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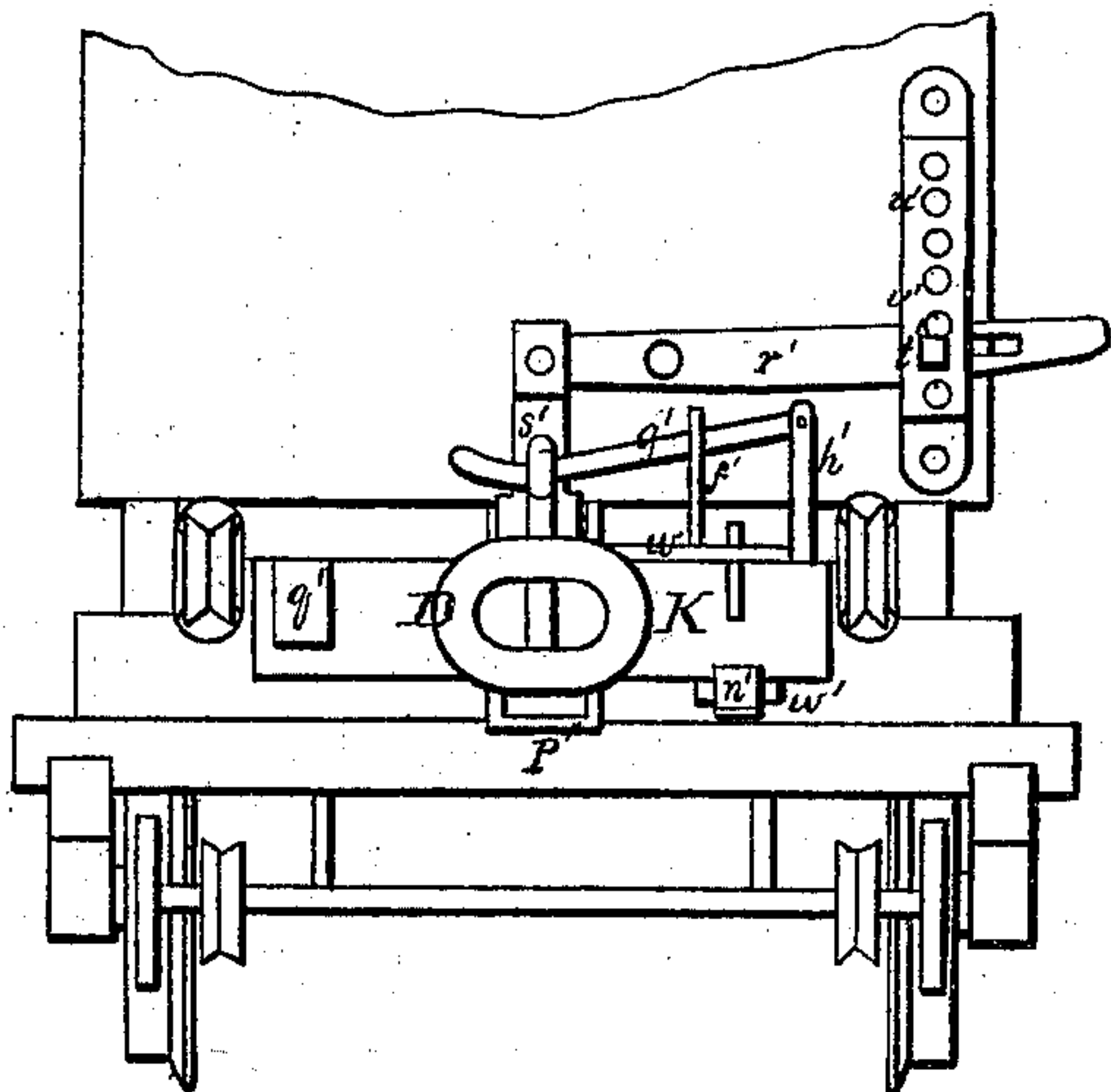


Fig. 5.

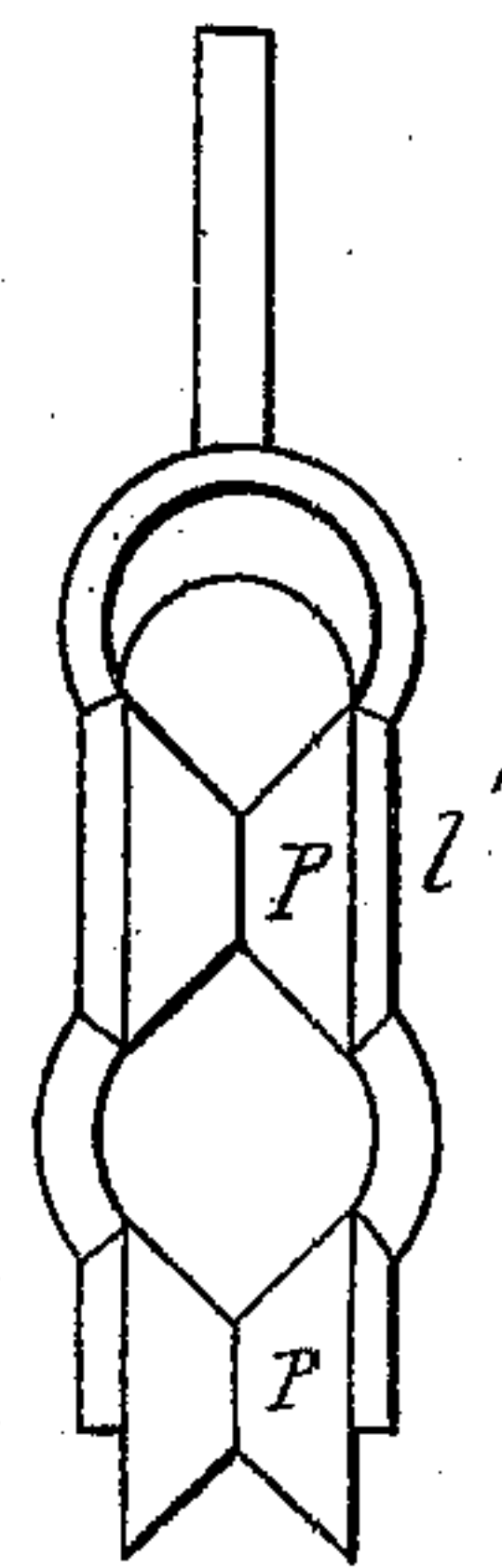


Fig. 3.

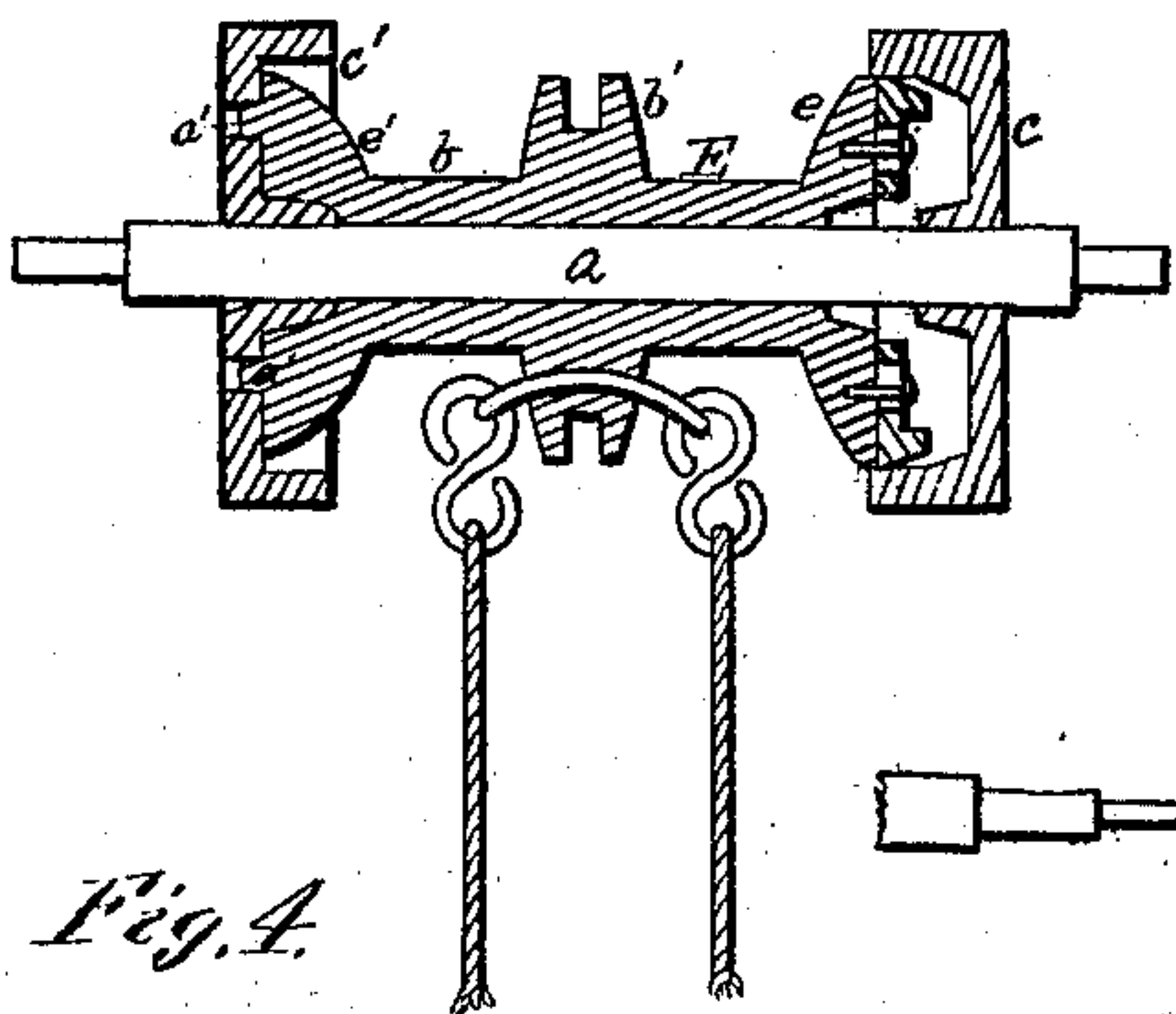


Fig. 6.

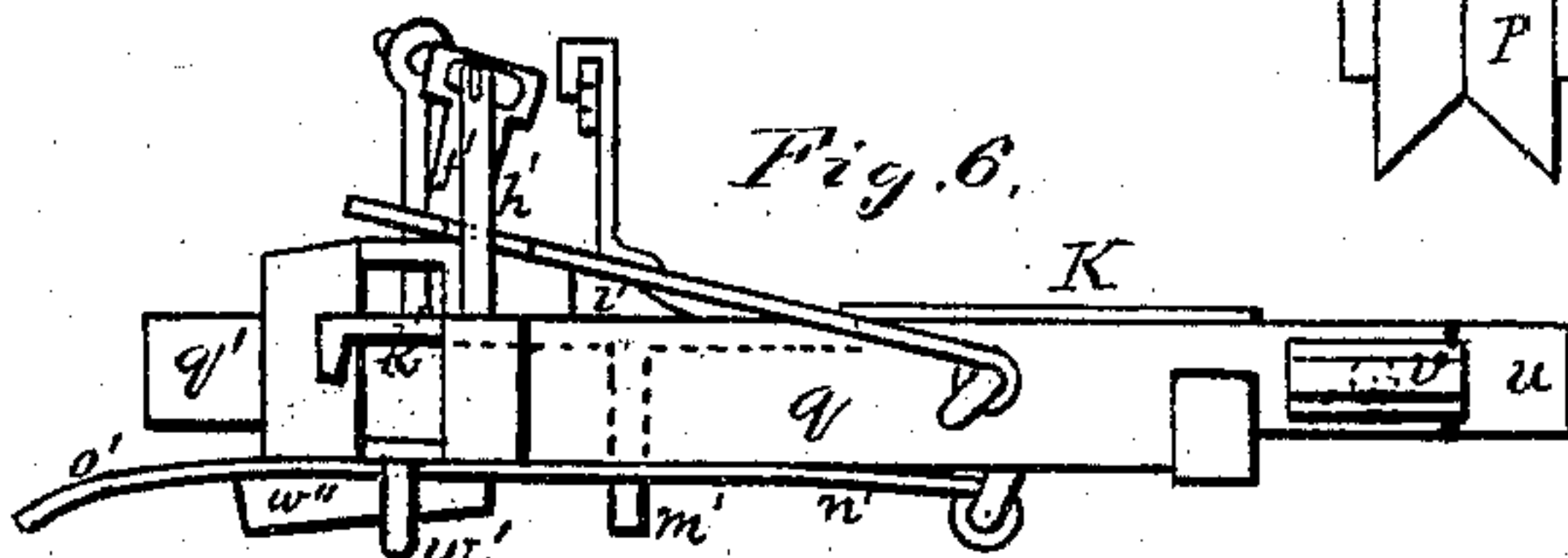


Fig. 4.

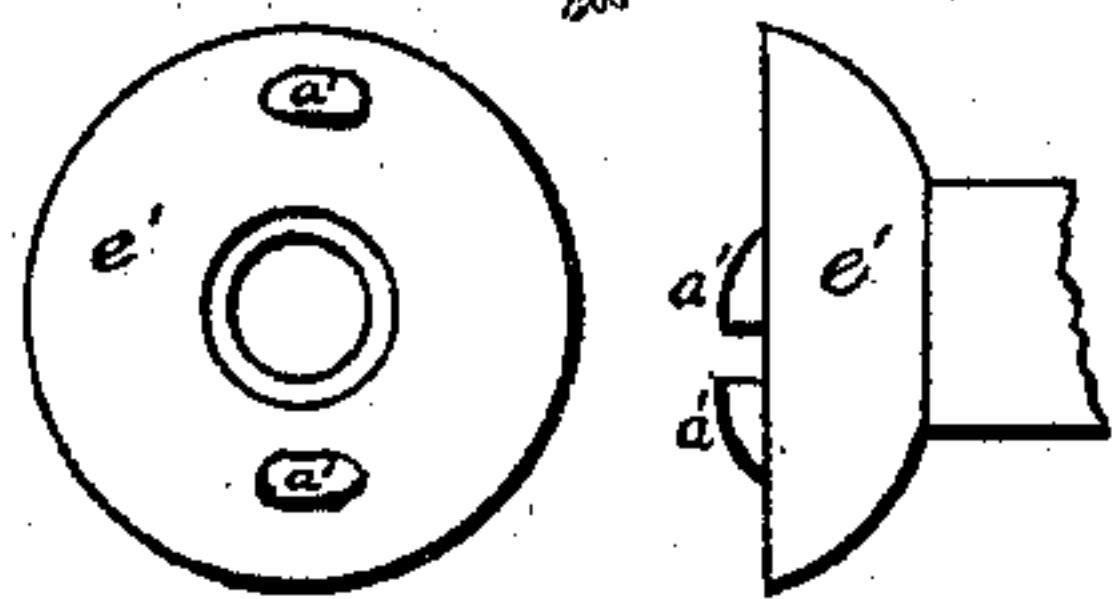


Fig. 7.

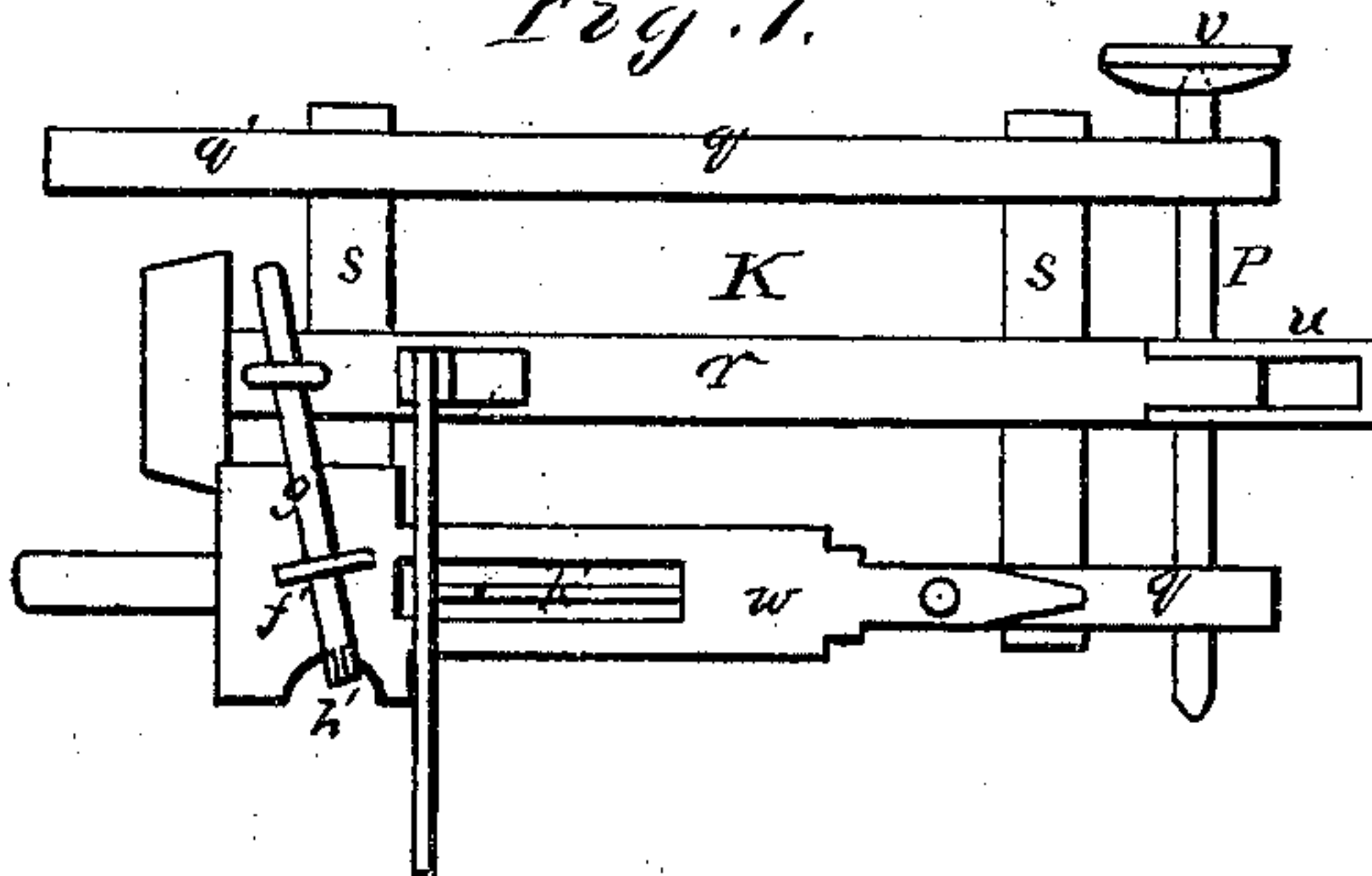


Fig. 8.

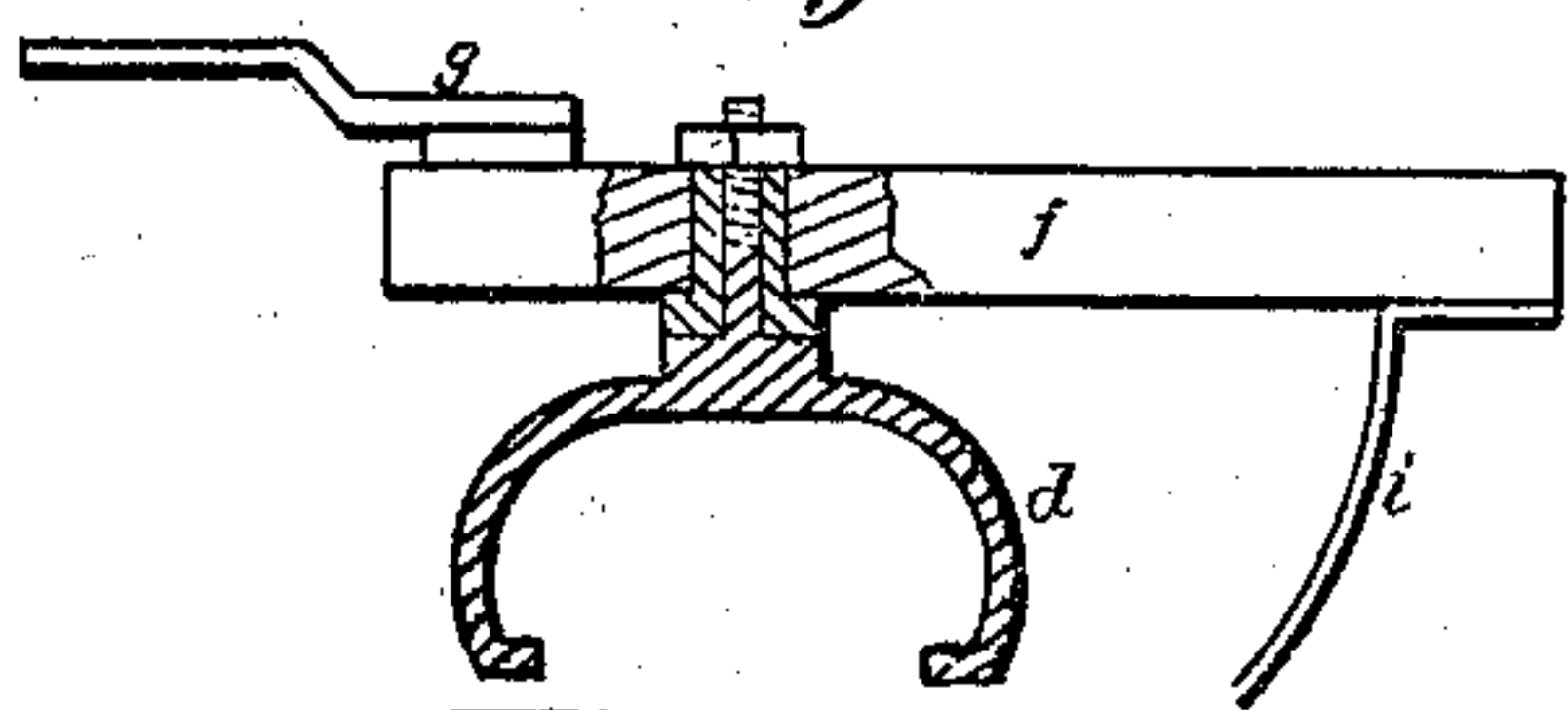
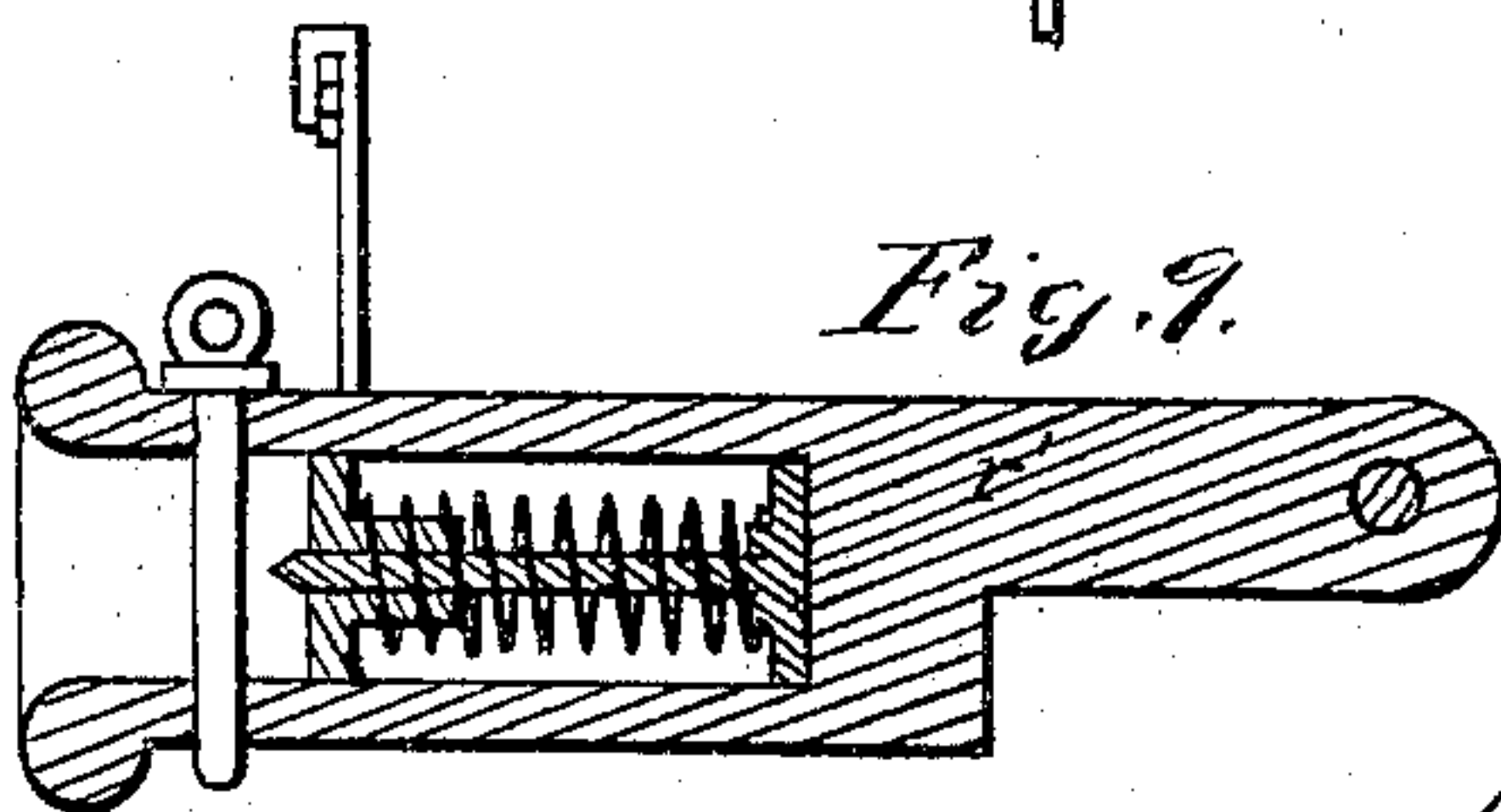


Fig. 9.



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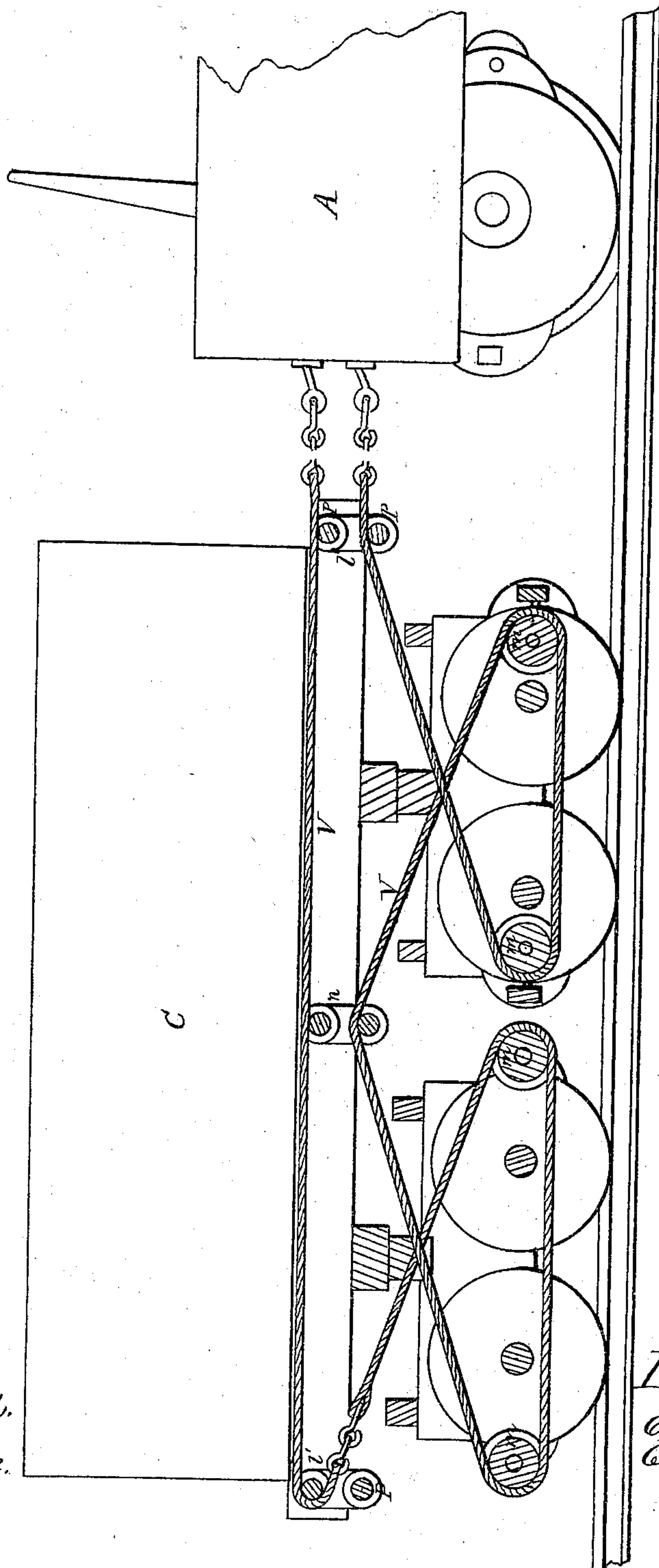
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Fig. 10.



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UNITED STATES PATENT OFFICE.

EDMOND O. RICHARD, OF QUEBEC, CANADA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JEAN E. RICHARD, OF COLUMBIA, SOUTH CAROLINA, AND JOSEPH C. RICHARD, OF QUEBEC, CANADA.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. 143,187, dated September 23, 1873; application filed July 3, 1873.

To all whom it may concern:

Be it known that I, EDMOND O. RICHARD, of Quebec, in the Province of Quebec and Dominion of Canada, have invented a new and valuable Improvement in Combined Car Brakes and Couplers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical, central, longitudinal section of the invention. Fig. 2 is an end view of the car. Figs. 3, 4, 5, 6, 7, 8, and 9 are details. Fig. 10 is a vertical longitudinal section, showing the chains.

This invention has relation to means for preventing railway collisions and other accidents liable to occur on account of the cars jumping the track, and from other causes; and it consists in the construction, novel combination, and arrangement of devices constituting the brake and coupler, whereby the brakes may be applied at the engine to each car in succession from the rear car, or from any of them, and whereby the uncoupling of the rear car, or of any car in the train, will cause the brakes to be put in operation automatically with all the power due to the steam-head and momentum of the engine.

In the accompanying drawings, the letter A indicates the engine; and B and C, cars attached thereto, the latter being the rear car. There may be any number of intermediate cars, B, all of which will be similarly arranged. Each car is provided with a coupling device, D, capable of being adjusted to uncouple automatically, when actuated by a rise or jump of the car to a certain height, in accordance with which the adjusting-lever is set. The adjustment is made in accordance with the depth of flange of the wheel and the roughness of the road. It is not always essential that the coupler should be adjustable, but the automatic uncoupling by the rise or jump of the car is indispensable. Each

car is also provided with swinging brakes, having pulleys attached to carry the brake chain or rope, which is designed to run from the engine back to the rear car free of the brakes, and then forward over the brake-pulleys to the engine again. The brake-chain is made in sections, arranged to uncouple between the cars. The engine is provided with a windlass, to which one end of the chain is attached, the other end being fastened to the engine brake or frame securely. The windlass is designed to be brought into connection with the shaft of the engine-wheel by means of clutches or other devices, which may be operated by a lever conveniently arranged in the cab.

When it is desired to stop the train, the lever is actuated to bring the windlass into connection with the shaft of the engine-wheel. The upper or free branch of the chain will first be tightened throughout the length of the train, after which the lower or return branch, which is connected with the brake-pulleys, will be drawn tense from the rear, and will effect the application of all the brakes of the train in succession from the rear, the engine-brakes being finally brought to bear. Similarly, should a car jump the track, it will become uncoupled, and will act as an anchor to draw the brake-chain tight, the momentum and steam-head of the engine serving to effect a most powerful application of the brakes in succession from the rear, as above described.

Referring more particularly to the drawings, which illustrate a preferred mode of applying my invention, the letter *a* indicates the shaft of the engine-wheels, to which the windlass is connected. Upon this shaft are secured the clutch-disks *c* and *c'*, the former of which is provided with a conical friction-bearing on the inside of the rim-flange, while the latter is recessed or slotted for the engagement of the clutch-studs. *E* designates the windlass, consisting of a sliding sleeve, *b*, having rigidly attached at one end a friction-disk, *e*, at the other end the disk *e'*, bearing the clutch-studs *a'*, and centrally the grooved collar *b'*. The disk *e* is provided with a beveled or conical periphery to

correspond with the friction-bearing of the clutch-disk *c*. This beveled or conical periphery is designed usually to be made in three or more sections, slotted, and connected with the disk by means of clamp-screws, so that when worn the sections can be adjusted outward. The clutch-studs *a'* of the disk *c'* are designed to engage with the slots or recesses of the disk *c'*, and are beveled at one end in such a manner that in backing the engine they will naturally free themselves from said slots. The grooved collar *b'* is adapted to engage with a swivel-bracket, *d*, connected to the under side of an arm, *f*, which is pivoted at one end to the frame of the engine, and provided at the other end with a connecting-arm, *g*, which is pivoted to a horizontal disk, *h*, journaled to the engine-frame, and connected by another link or arm, *g'*, with the operating-lever *F*. To the arm *f* is also attached a spring, *i*, which is designed to bear on the under side of the collar *b'* to steady the windlass-sleeve on the wheel-shaft. If two chains are employed, as is indicated in the drawings, one end of each may be attached to a stout link passing through a perforation in the collar *b'*, whence the chain passes to the end of the engine-frame through a metal-lined chain-hole, *k*, and terminates in a coupling hook or link, *l*. *G* indicates the brake-blocks connected with a swinging frame, *H*, which may be kept off the wheels, when not drawn up by the chain, by means of springs or other suitable devices. To the swinging frame *H*, in rear of the blocks *G*, are attached the pulleys *m*. Blocks *n* of any form may be attached to the under side of the car-frame at suitable distances apart, to support the brake-chain whenever necessary, and metal-lined chain-holes *l'* are designed to be provided at each end of the car for the passage of the brake-chain. These are provided with pulleys *p*, either single or double, for the passage of the chain. Instead of the chain-holes rigidly constructed in the frame of the car, blocks with single or double sheaves may be employed. The brake-chain *V* consists of a number of sections connected between the cars by means of coupling devices, so that they can be easily detached when the cars are uncoupled. If two chains are used, each car will be provided with four sections of chain, of which the two upper sections form portions of the upper or free branches, and the two lower sections portions of the lower branches, which are connected with the pulleys *m*.

The coupling devices, by which the cars are connected and disconnected, are chiefly attached to a bumper-frame, *K*, which may consist of several longitudinal bars, *q*, connected with the draw-head *r* by transverse bars *s*. This frame is pivoted at its rear end to the frame of the car by means of a transverse journal-shaft, *t*, pivoted at its ends in slide-blocks *v*, adapted to move in suitable ways in the car-frame. To the rear of the draw-head is pivoted, on the transverse shaft *t*, a joint, *u*, designed always to be square with the spring,

whatever be the angle of the frame *K*, as this may be adjusted higher or lower to suit cars of different heights. The bars *q* are of different lengths, that on one side being extended at *q'* to form a finger adapted to fit, when two cars are coupled together, between two hinged plates respectively attached to the short bar *q* on the same side of the opposite car. The short bar *q* on the opposite side of the draw-head is provided on its upper surface with a hinged plate, *w*, bearing near its forward end a standard, *f'*, slotted at its upper end for the passage of the lever-bar *g'*, which is fulcrumed at its outer end to a standard, *h'*, connected to a frame, *K*. The bar *q* is provided with a slide groove or way for the reception of a slide-bar, *k'*, having a wedge-shaped rise or cam, *l'*, abruptly shouldered at its forward end. This slide may be moved forward by means of a handle, *m'*, to support the plate *w* and keep the coupling-pin raised. Below the bar *q* is attached, by a hinge-connection at its rear end, a plate, *n'*, sometimes slotted, when the handle *m'* of the upper plate passes through it, and bent downward and forward at its front end to form an inclined plane, *o'*, which projects under the extension *q'* of the opposite bar *q* of the opposite frame *K*. A staple *P'*, or other support may be passed under the draw-head, at its forward portion, to support the frame *K*, said staple or support having sufficient length to allow the requisite play to said frame, which is directly suspended by its forward end to an adjustable lever, *r'*, by means of an arm, *s'*. The adjustable lever *r'* is pivoted to the car-frame, and slotted at its rear end to receive a pin, *t'*, designed to enter any one of a series of perforations, *w'*, of a plate, *v'*, also attached to the car-frame. By the adjustment of the lever *r'* the frame *K* may be suspended at any height desired, to correspond with the height of the coupling devices of the opposite car. The forward end of the plate *n'* is supported by a staple or loop, *w'*, and a wedge or key, *w''*, is provided for the purpose of holding the plate up against the under side of the bar *q* when the cars are coming together in the coupling operation. In this manner the extension *q'* of the opposite coupling-frame *K* is brought directly to bear against the projecting end of the slide *k'*, driving it home and releasing the upper plate *w*, which falls, dropping the coupling-pin into the coupling-link in the cavity of the draw-head. The coupling-frames are carefully adjusted, by means of the levers *r'*, to regulate the height at which the coupling-pin will be drawn by a jump of the car. This is sometimes necessary, as the same car may pass over roads of rough character as well as over smooth roads. Where the character of the road is uniform a constant adjustment will serve. The jump of the car raises the extension *q'* of its coupling-frame *K*, thus throwing up the plate *w*, and with it the coupling-pin of the opposite car, uncoupling the two from each other. As in railway accidents it commonly hap-

pens that the cars are thrown laterally, the windlass-disks, and all pulleys and openings through or over which the brake chain or rope passes, should be rounded or flared, to prevent catching or parting said chain or rope, on the continuity of which may hang many valuable lives.

I have indicated above a convenient and economical means of applying my invention. As these devices may be varied in many ways well known to those skilled in the art, I do not desire to confine myself to the precise construction described.

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

1. The combination, with a windlass or other winding device on the engine and car-brakes having suitably-arranged pulleys, of a brake chain or rope connected by both ends to the engine, and engaging by its return branch with said pulleys, substantially as specified.

2. The combination, with an automatic uncoupling device, of an automatic car-brake, substantially as specified.

3. The hinged coupling-frame K, bearing on one side of the draw-head the extension q' , and

on the opposite side thereof the lifting-plate w , respectively designed to engage with a similar lifting-plate and extension connected with the opposite car, substantially as specified.

4. The combination, with the hinged coupling-frame K, having the lifting-plate w and the extension q' on opposite sides of the draw-head, of the hinged guide-plate, key, and adjustable suspension-lever, substantially as specified.

5. The combination, with the coupling-frame K, of the transverse journal-shaft, slides, and pivoted joint, designed to move in line with the spring at the rear of the draw-head, substantially as specified.

6. The arrangement of the winding device, brake-chain, and pulleys, whereby the brakes are operated in succession from the rear, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

EDMOND OVIDE RICHARD.

Witnesses:

GEORGE E. UPHAM,
JOS. B. LOOMIS.