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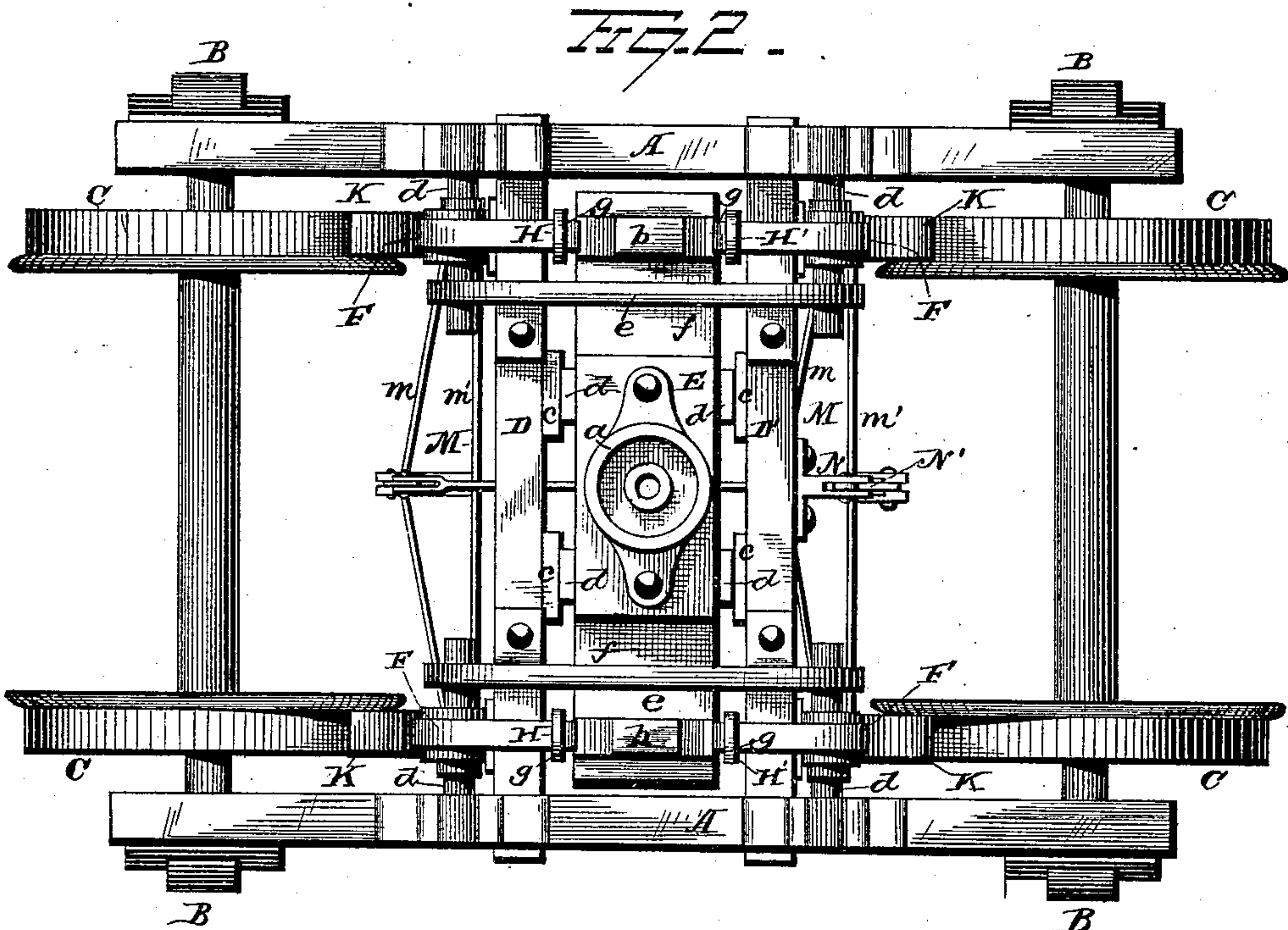
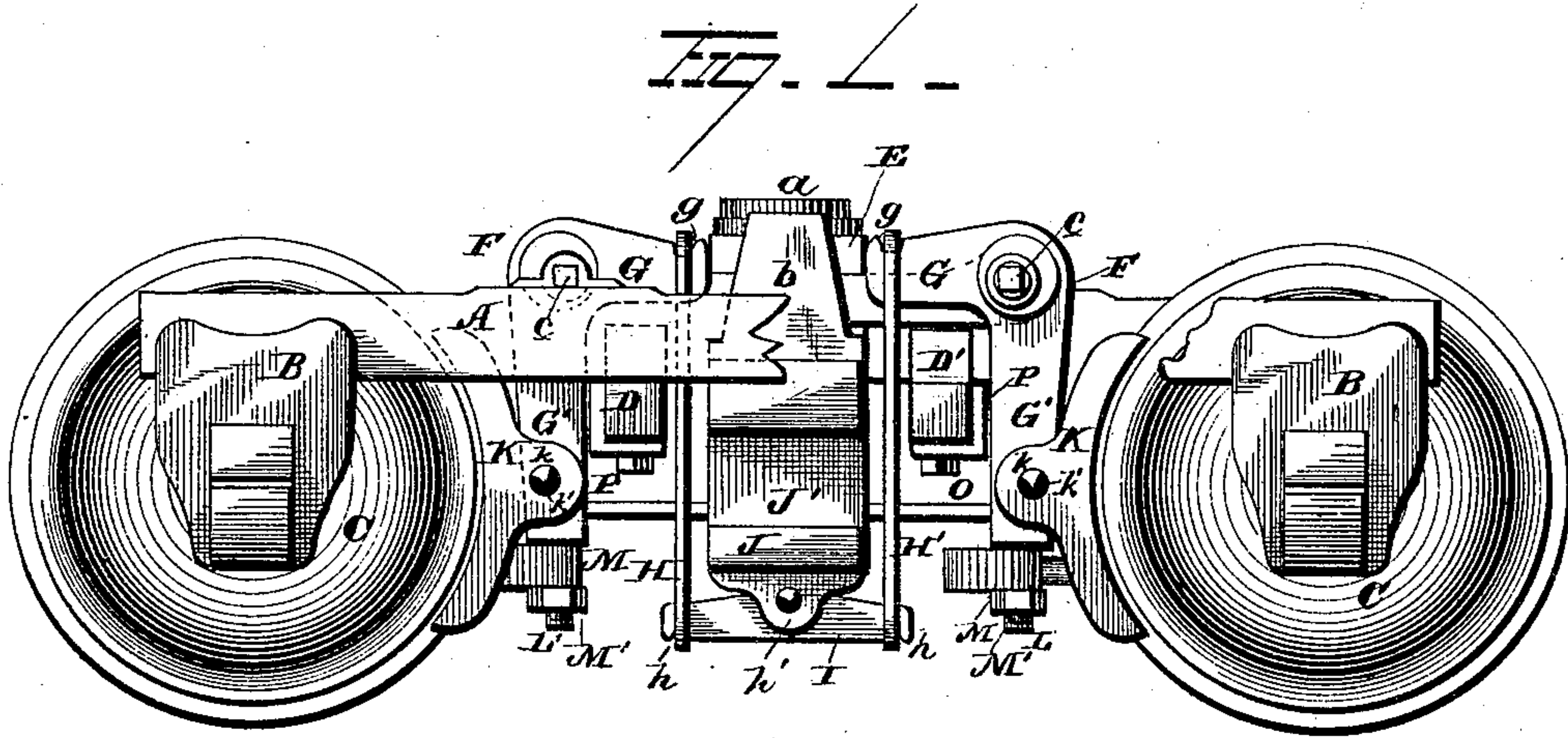
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J. F. MALLINCKRODT.

CAR BRAKE.

No. 256,017.

Patented Apr. 4, 1882.



WITNESSES

*E. J. Nottingham.*  
*Herman Moran.*

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Fig. 3

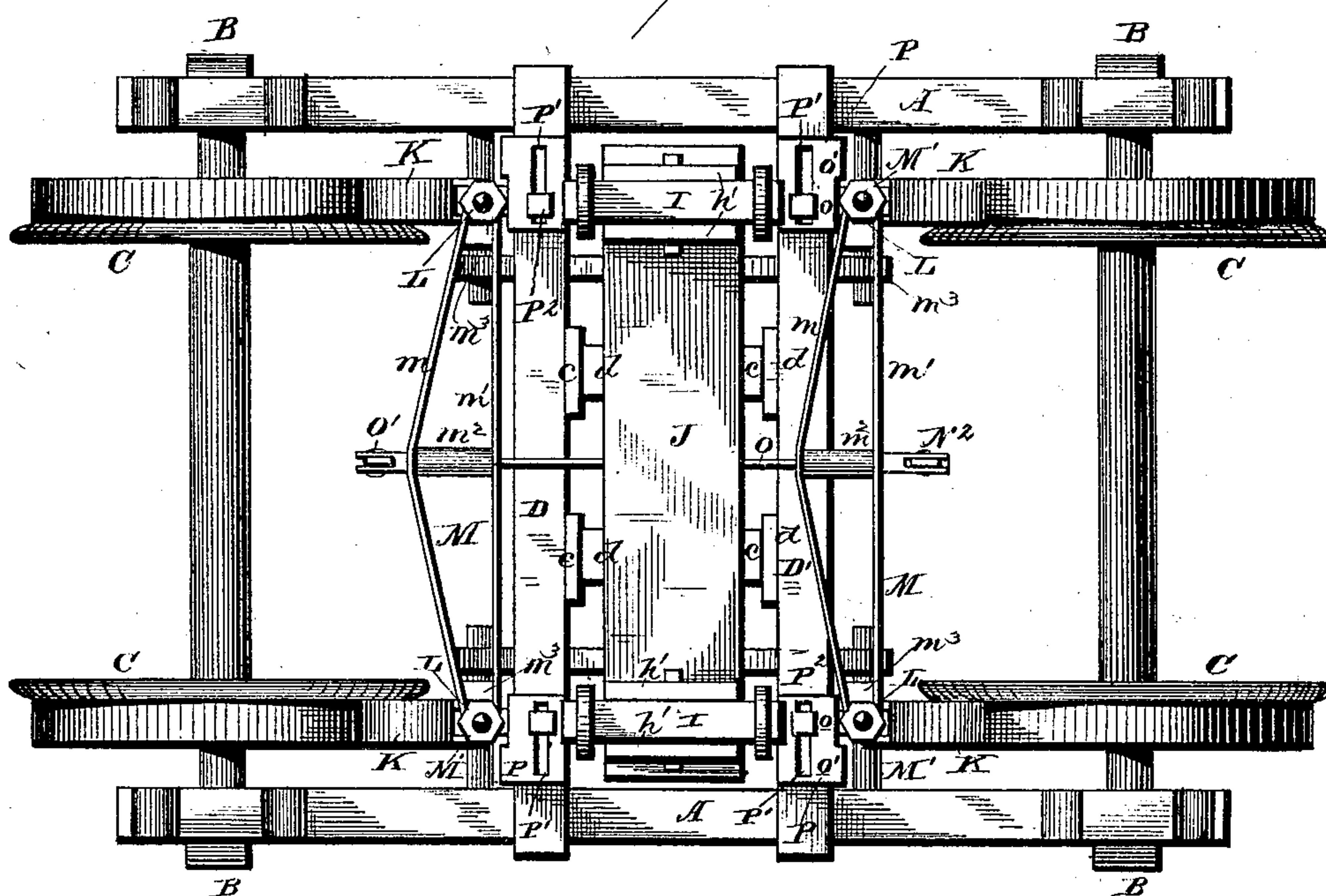
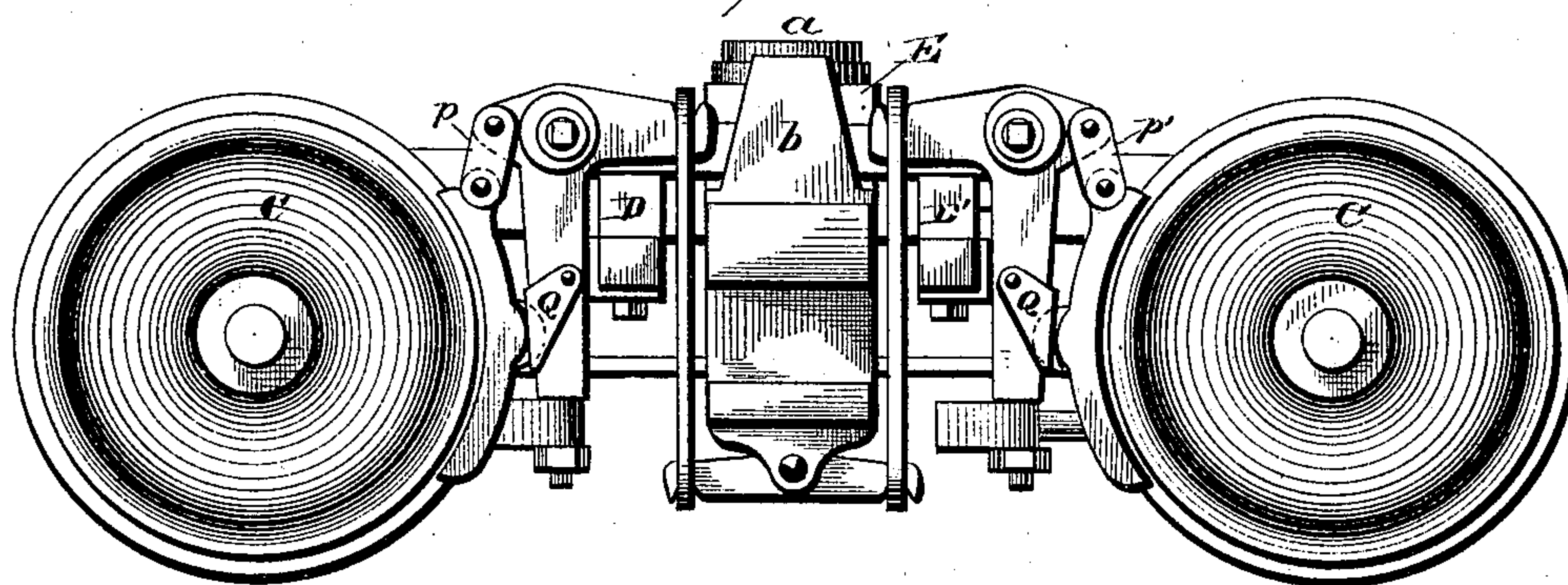


Fig. 4



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(No Model.)

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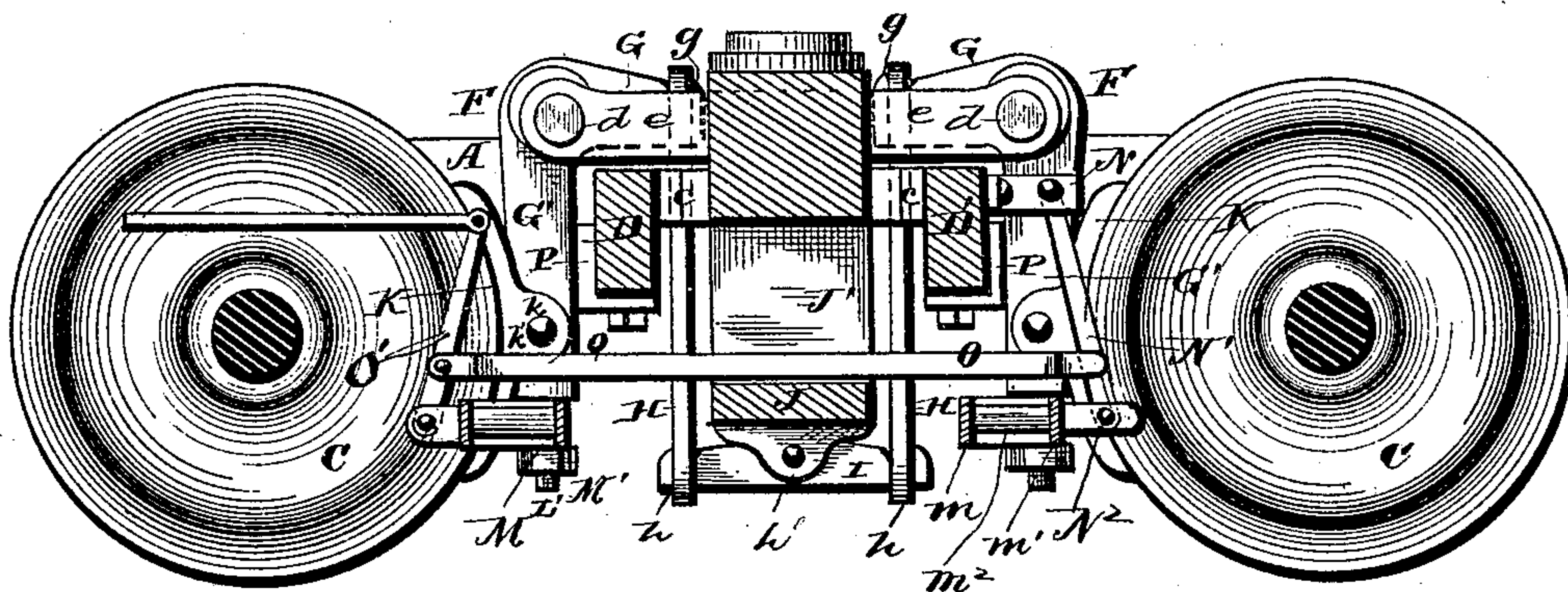
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Fig. 5.



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# UNITED STATES PATENT OFFICE.

JOHN F. MALLINCKRODT, OF DENVER, COLORADO, ASSIGNOR OF ONE FIFTY-  
SECOND TO P. H. VAN DIEST, OF SAME PLACE.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 256,017, dated April 4, 1882.

Application filed September 13, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. MALLINCKRODT, of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Railway-Car Brakes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to an improvement in railway-car brakes, the object being to provide a car-brake of such construction that the weight of the car may be utilized in setting the brake, and the brake-shoes released by manual power or by steam or atmospheric pressure.

My invention consists, first, in the combination, with a truck-bolster adapted to move vertically and equalizing-bars pivoted to the under side of the spring-board, of pivoted brake-levers and stirrups connected at one end with the upper and short ends of the brake-levers, and at their other ends to the opposite ends of the equalizing-bars, whereby the weight of the car is evenly distributed on the brake-shoes of the truck.

My invention further consists in the combination, with the truck-frame and bolster, and brake-lever-supporting bars fixed to the cross-beams of the truck-frame, of the pivoted brake-levers and journals, the latter being secured at one end to the brake-lever-supporting bars, and at their opposite ends to the side pieces of the truck-frame.

My invention further consists in the combination, with the bolster provided with end bearings, of the brake-lever-supporting bars secured to the cross-beams of the truck-frame and serving as stops to limit the endwise movement of the bolster.

My invention further consists in certain other features of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of a car-truck provided with my improved brake mechanism. Fig. 2 is a plan view of the same. Fig. 3 is a plan

view of the under side of the truck, and Fig. 4 is a modification. Fig. 5 is a longitudinal section.

A represents the side beams, B the pedestals, C the wheels, and D D' the cross-beams, of a truck, which parts may be of the ordinary or of any desired form, material, or construction.

E is the bolster, and is provided with the center casting, *a*, through which is inserted a king-bolt for connecting the car-frame with the truck. The outer ends of the bolster are formed with supports *b b* for the opposite sides of the car-frame. Bolster E is located between the cross-beams D D', and is adapted to have an endwise swinging movement, as will hereinafter be explained, and in such movement is retained from direct contact with the cross-beams by means of the wearing-plates *c d*, secured to the sides of the bolster and cross-beams, whereby the bolster is retained in its proper position and adapted to be self-adjusting without danger of becoming wedged between the cross-beams; and, further, such construction allows of the ready replacement of the wearing-plates when unduly worn, and thus insures the continued perfect adjustment and action of the bolster.

F represents brake-levers, they being of bell-crank form and located on opposite sides of the bolster. Brake-levers F are pivoted at *e* upon journals or shafts *d*, the inner ends of which are supported in the opposite ends of a bar, *e*, which is secured to the cross-beams D D', the central portion of the bar being located within a slot or cut-away portion, *f*, in the bolster, formed between the end supports of the bolster and its center casting, said bar thereby serving as a stop to limit the endwise swinging movement of the bolster. The brake-levers F are each composed of the short arm G and long arm G'. The short arms G are provided with notches *g* near their ends, within which are inserted the upper ends of the stirrups H H', their lower ends being inserted in notches *h*, formed near the opposite ends of an equalizing-bar, I, which is pivoted between lugs *h'*, fastened to the under side of the spring-board J. Springs J', of rubber or metal, are inter-



posed between the ends of the spring-board and bolster.

To the lower portions of the long arms  $G'$  of the brake-levers are pivoted the brake-shoes  $K$ , which are constructed with lugs  $k$ , that fit the opposite sides of the brake-levers, and by means of bolts  $k'$  extending through the lugs and brake-lever the brake-shoes are pivoted to the brake-levers and retained against displacement.

From the lower end of the long arm  $G'$  of the brake-lever projects a stud,  $L$ , which serves as a bearing for the end of the brake-beam  $M$ , which latter is of the truss type, the truss-bar  $m$  and straight or tie bar  $m'$  being braced at their central portions by a thimble,  $m^2$ , and at their opposite ends by the blocks  $m^3$ . The lower ends of the studs  $L$  are screw-threaded for the engagement of the nuts  $M'$ , which serve to retain the brake-beams in place.

To one of the cross-bars is secured a bracket,  $N$ , to which is pivoted the upper end of a lever,  $N'$ , the lower end being pivoted to a stud,  $N^2$ , attached to the center of the brake-beam, said stud being secured at one end to the center of the truss-bar, and extending through the tie-bar and outwardly from the latter to allow the lever  $N'$  to be pivoted thereto. The thimble or sleeve  $m^2$  encircles the stud and serves as a spacing bar or sleeve.

To the lever  $N'$  is pivoted a brake-rod,  $O$ , the opposite end of which is pivoted to the lever  $O'$ , which latter is pivoted to the other brake-beam of the truck. The lever  $O'$  is suitably connected by rods and chains with the hand braking mechanism, and may also be connected with a steam, vacuum, or electric brake mechanism, whereby the brake may be actuated either by hand or by steam, atmospheric pressure, or electricity.

To the under side of the cross-beams  $D$   $D'$  are secured the adjustable stop-plates  $P$ , one for each brake-shoe. These stop-plates are of angle-iron form, that portion fitting against the under side of the cross-beams being provided with an elongated slot,  $P'$ , through which is inserted a bolt or screw or other fastening device,  $P^2$ , for securing the stop-plate to the cross-beam in any desired adjustment. The vertical face of the stop-plate is made in sections of different thicknesses. The plates shown in the drawings are each composed of a comparatively thin section,  $o$ , and a section,  $o'$ , of double thickness, and, if desired, another section may be added. The purpose of this plate is as follows: When the brake-shoes are new and unworn the stop-plates are adjusted so that their thin sections shall be interposed between the brake-levers and cross-beam, and thus prevent any undue movement of the brake-shoe and prevent wear of the cross-beam. After the brake-shoes have been somewhat worn they have too much play, or, in other words, too much lost motion, and hence the stop-plates are then adjusted longitudinally on the cross-beams, so as to interpose the next thicker section between

the brake-lever and cross-beam, and thus take up for the wear of the brake-shoes and prevent lost motion.

Instead of pivoting the brake-shoes directly to the brake-levers, they may be arranged and secured as illustrated in Fig. 4, wherein it will be observed that the upper end of the brake-shoe is connected to the brake-lever by means of the link-bars  $p$   $p'$ , while a removable wearing-plate,  $Q$ , is attached to the lower portion of the long arm of the brake-lever and bears against the brake-shoe.

Having described the construction and relative arrangement of parts of my invention, I will now give a brief description of its operation.

The weight of the car rests upon the center casting and end supports of the bolster, and is prevented from actuating or setting the brakes by means of power applied to the brake mechanism (hand or power) connected with the lever  $O$ . When it is desired to set the brakes the hand brake wheel is partially or wholly released, or, if steam or a vacuum brake mechanism is employed, the pressure is lessened, so that the lever  $O$  may recede and allow the weight of the car to be transmitted through the stirrups and bell-crank brake-levers, causing the brake-shoes to be forced snugly against the car-wheels, and this pressure can be regulated by varying the relative lengths of the long and short arms of the brake-levers. In the event that the car should become detached from the rest of the train, and the steam or air brake couplings parted, the brakes would be automatically set, and thus the car brought to a full stop. By making the bell-crank levers with their long arms about one-half the length of the short arms, it will be practically impossible to cause the wheels to slide and thus become flattened, and thereby rendered practically worthless. The equalizing-bars pivoted to the spring-board allow of a free endwise swinging movement of the bolster, and also cause the weight to be equally distributed upon the brake-shoes of the front and rear wheels of the truck.

It is evident that slight changes in the construction and relative arrangement of parts might be resorted to without departing from the spirit of my invention, and hence I do not restrict myself to the exact features of construction and relative arrangement of parts shown and described; but,

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

1. In a car-brake, the combination, with a vertically-movable bolster and spring-board, the latter provided with equalizing-bars, of bell-crank brake-levers and stirrups connected at their upper ends with the short arms of the brake-levers, and at their lower ends with the opposite ends of the equalizing-bars, substantially as set forth.

2. The combination, with the vertically mov-



able and swinging bolster, of bell-crank brake-levers pivoted upon rods or journals, the outer ends of said rods being secured to the side beams of the truck-frame and their inner ends supported in bars attached to the cross-beams of the truck, substantially as set forth.

3. The combination, with the swinging bolster having recesses formed near its ends, of the brake-lever-supporting bars secured to the cross-beams of the truck, said bars serving as stops to limit the endwise movement of the bolster, substantially as set forth.

4. The combination, with the bell-crank brake-levers having studs on their lower ends, of

brake-beams removably secured to said studs, substantially as set forth.

5. The combination, with the brake-levers, of adjustable stop-plates interposed between the cross-beams and brake-levers, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN F. MALLINCKRODT.

Witnesses:

HERMAN MORAN,  
GEO. D. SEYMOUR.