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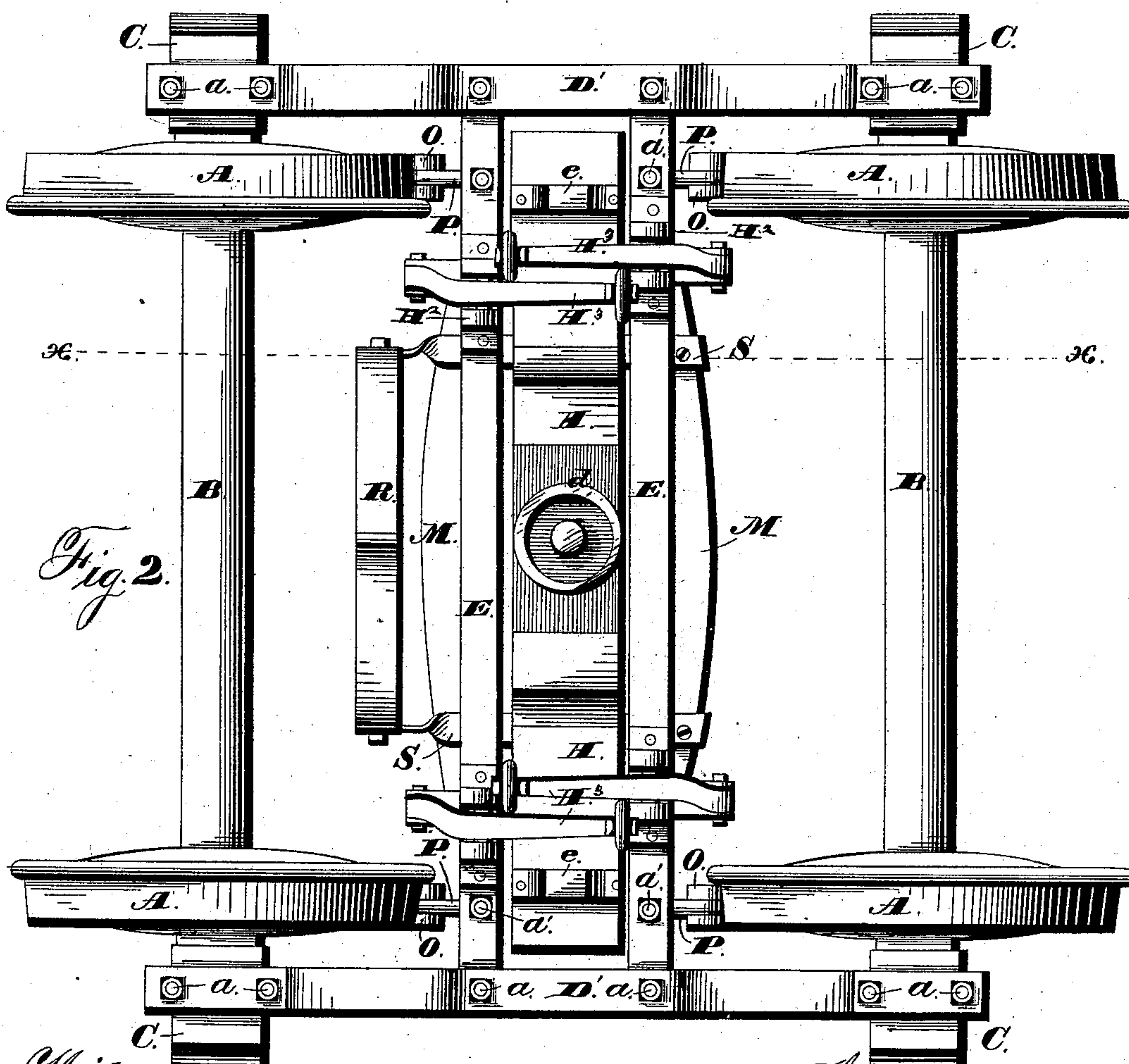
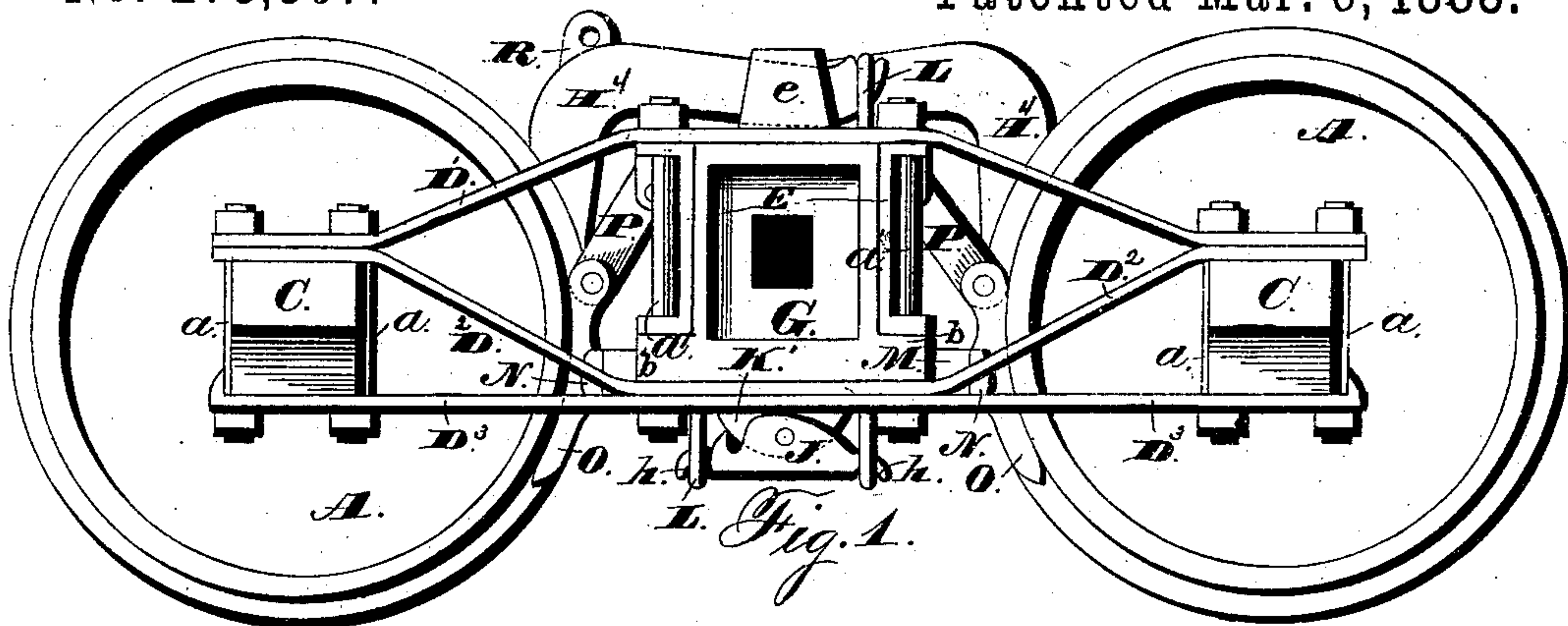
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J. F. MALLINCKRODT.

CAR BRAKE.

No. 273,567.

Patented Mar. 6, 1883.



Witnesses:  
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Geo. W. Serran.

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(No Model.)

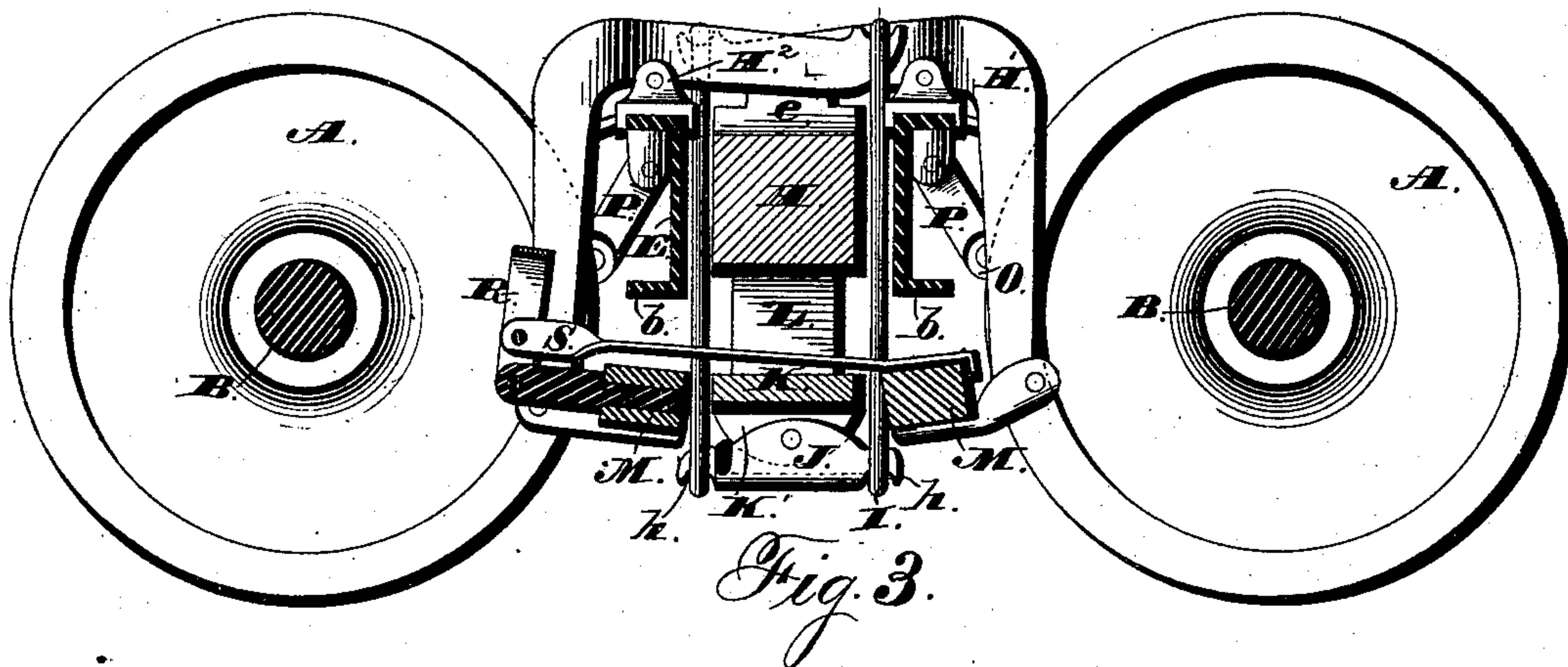
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J. F. MALLINCKRODT.

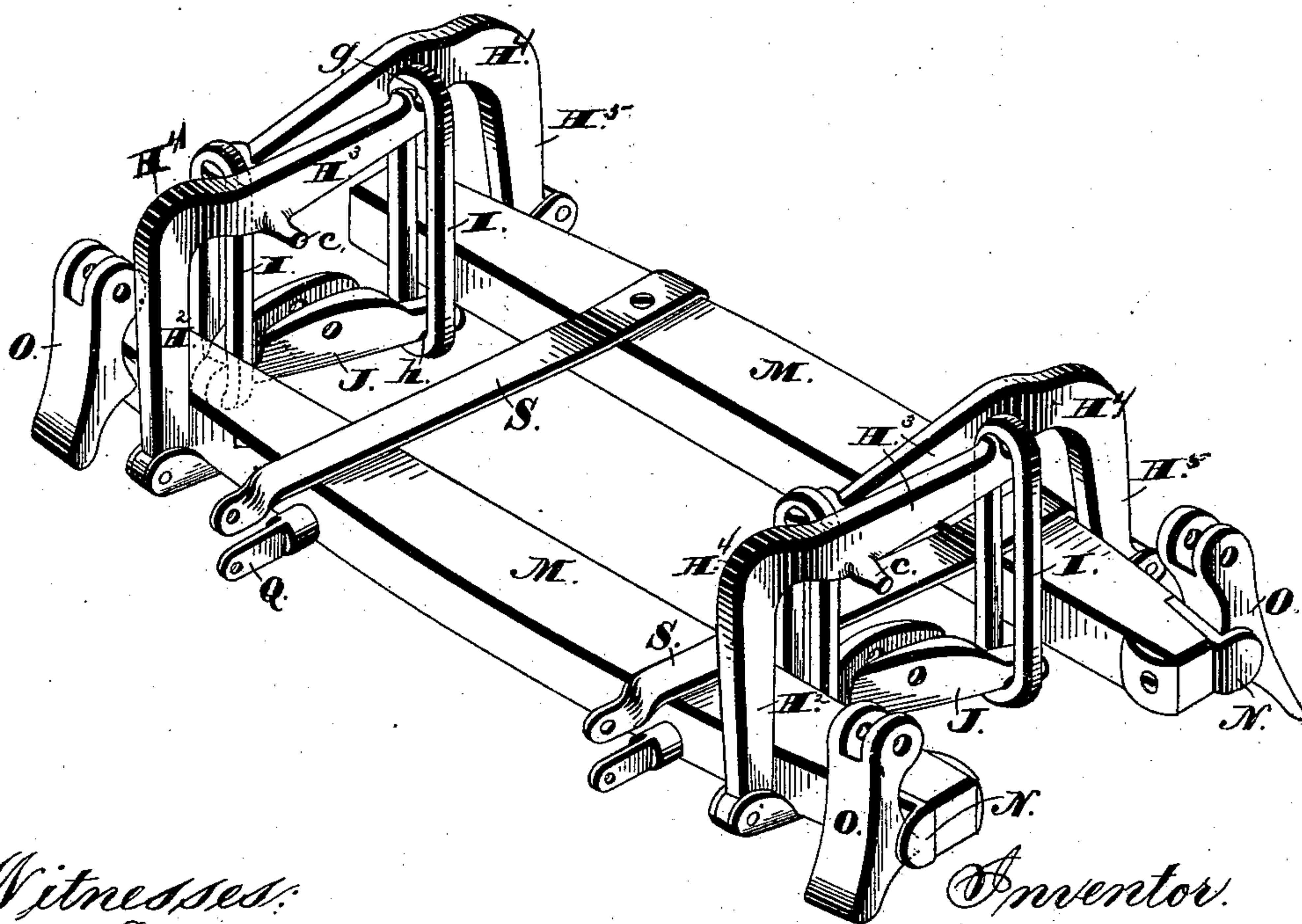
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*Fig. 4.*



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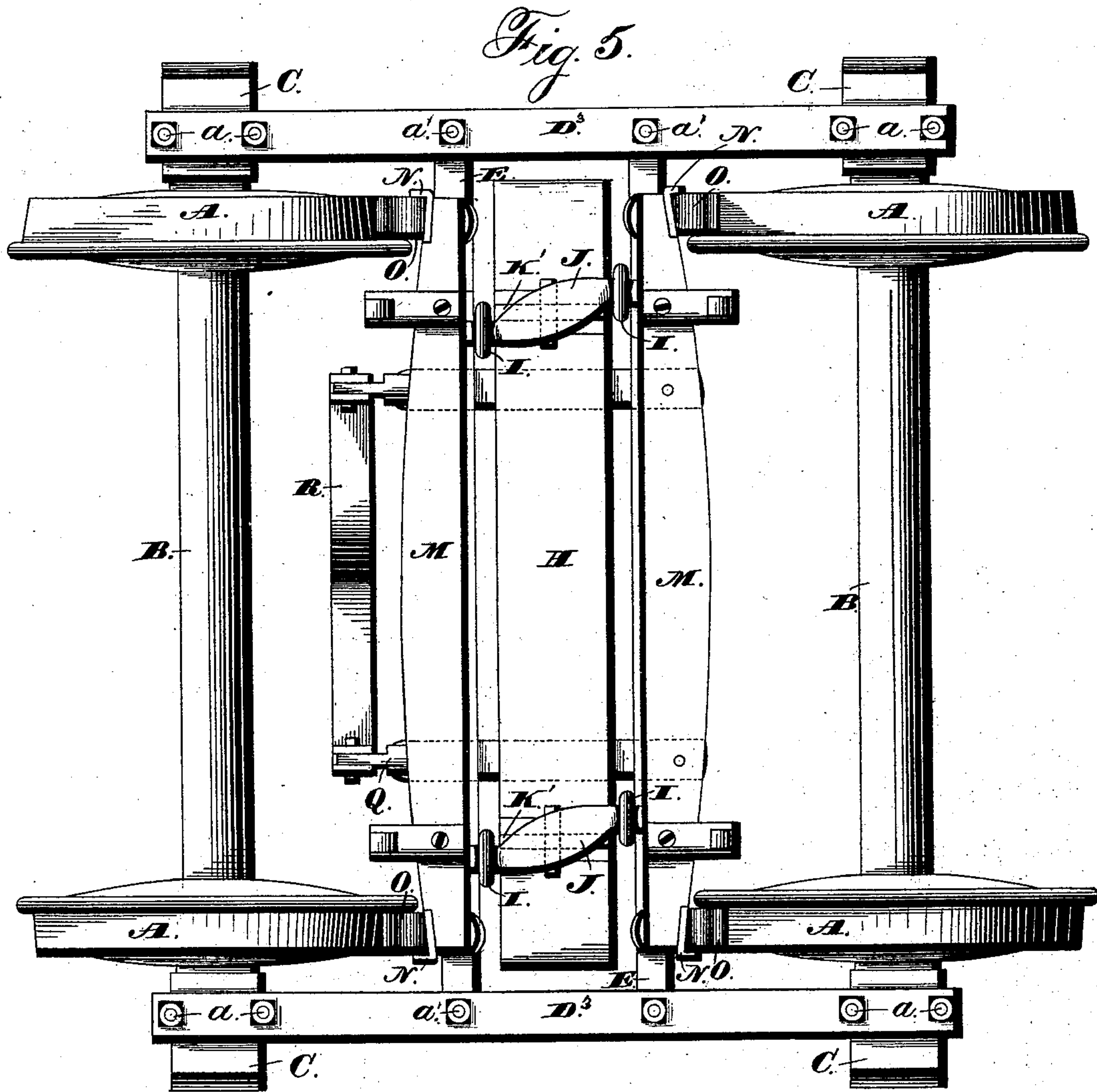
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*(Witnesses:*

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# UNITED STATES PATENT OFFICE.

JOHN F. MALLINCKRODT, OF DENVER, COLORADO, ASSIGNOR TO THE MALLINCKRODT BRAKE COMPANY, OF EAST ST. LOUIS, ILLINOIS.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 273,567, dated March 6, 1883.

Application filed November 11, 1882. (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 Trucks and 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 trucks and brakes, and is designed more particularly as an improvement on my Patents Nos. 240,033, 256,017, and 256,018; and it consists in certain details in construction and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side view of my improved truck and brake. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal vertical sectional view taken on the line  $x x$  of Fig. 2. Fig. 4 is a detached perspective view of the brake-shoes, brake-bars, brake-levers, and operating-lever; and Fig. 5 is a bottom plan view.

A represents the truck-wheels; B, the axles, and C the axle-boxes, which latter are rigidly secured to the trussed sides of the car-truck. Each side is composed of the two angle irons or beams  $D^1$   $D^2$  and one straight beam,  $D^3$ . The ends of the beams  $D^1$   $D^2$  are secured together on top of the axle-boxes; but the central portions thereof are separated for the introduction of the ends of the cross-bars. The straight beam  $D^3$  rests against the under side of the axle-boxes and cross-beams, and the parts thus associated are secured together by the bolts  $a a'$ . The bolts  $a$  pass through the three beams  $D^1$ ,  $D^2$ , and  $D^3$  on opposite sides of the axle-boxes, and rest in grooves formed on the sides of the said axle-boxes. These grooves prevent the accidental displacement of any of the parts. The bolts  $a'$  pass through the three beams and through the lateral flanges of the cross-beams, and firmly unite the parts at these points. This construction of frame is strong and durable, and can be manufactured at a comparatively small initial cost.

The cross-beams E, two in number, run transversely across the truck, between the

wheels thereof, and, as before stated, their opposite ends are rigidly held in position between the side beams of the frame. These cross-beams are made of angle-iron, and are separated sufficiently for the introduction between them of the bolster H, and are provided at their ends with the open-faced metallic heads G, the lateral flanges  $b$  of which form seats or rests for the ends of the cross-beams. These heads are secured in position by the bolts  $a'$ , which latter pass upward through the flanges  $b$ . Bolster H is adapted to have an endwise swinging movement between the cross-bars, but in such movement is retained from direct contact with the side beams by the heads G, whereby the bolster is retained in proper position and adapted to be self-adjusting without danger of becoming wedged.

$H^4$  represents the brake-levers, they being of bell-crank form and situated on opposite sides of the bolster. These levers are each provided with trunnions  $c$ , by means of which they are pivotally secured to the bearings  $H^2$ , and the said bearings are rigidly secured on the tops of the cross-bars, near the outer ends thereof. The brake-levers are each composed of a horizontal arm,  $H^3$ , and a vertical arm,  $H^5$ , the horizontal arm  $H^3$  being sufficiently long to extend over one cross-bar and over the bolster, and each is provided on its outer end with a notch,  $g$ , for the upper end of one stirrup I to rest in. These stirrups, four in number, pass downwardly between the bolster and cross-beams, and the lower ends thereof are inserted in notches  $h$ , formed near the opposite ends of the equalizing-bars J, which latter are pivotally secured to the under side of the spring-board K. These equalizing-bars are made sufficiently strong to sustain the pressure exerted upon them, and are each provided at opposite extremities with the notches  $h'$ , for the reception of the lower ends of the stirrups I. These bars, instead of passing straight across the under side of the spring-bar, as shown in Patent No. 256,017, previously referred to, pass transversely across in a diagonal direction, so as to enable the outer ends thereof to register with the two stirrups on the same side of the truck. Each equalizing-bar is also provided with a diagonal groove, into which the depending lugs  $K'$  on the under side of the spring-board rest,



and to which the said equalizing-bars are pivotally secured. The grooves in the equalizing-bars, before referred to, run diagonally to the length of the said bars; but these bars are so placed that the slots therein run straight across the under face of the spring-bar, while the equalizing-bars themselves run diagonally across the same. By means of this diagonal slot and the depending lugs (which latter run straight across the spring-board) the equalizing-bars are free to vibrate or rock without danger of twisting or becoming wedged. Springs L, of rubber or metal, are interposed between the ends of the spring-board and bolster. The vertical portions of the brake-levers H<sup>4</sup> rest on the inner side of the wheels, and the lower ends thereof are pivotally secured to the outwardly-projecting fingers of the brake-bars M, which latter are situated under the cross-bars of the truck-frame. Each brake-bar is provided near its opposite end with a guard, N, against which the rear or convexed side of the brake shoes bears, and by which they are retained against lateral displacement. These brake-shoes O are suspended from the cross-beams, between the brake-bars and the wheels, by means of the links P.

To one of the brake-bars are two outwardly-projecting brackets, Q, to which latter the lower ends of the bent or bifurcated operating-levers R are pivotally secured. This operating-lever R is connected to the brake-bar, on the opposite side of the cross-bars, by the connecting-bars S, which latter are secured at one end to the said brake-bar and pass between the spring-board and bolster, and are pivotally secured at their opposite ends to the operating-lever R, slightly above the brackets Q. Thus it will be seen that when the upper end of the operating-lever is moved inward toward the bolster both brake-bars are separated and the brake-shoes are forced against the wheels; but when the operating-lever is moved away from the bolster the brake-bars are forced together, which releases the brake-shoes from frictional contact with the wheels. As soon as pressure against the brake-shoes is removed, the said shoes move away from the wheels by gravity alone. The upper end of the bent or bifurcated operating-lever R 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 brakes may be actuated either by hand or by steam, atmospheric pressure, or electricity. By providing a bent or bifurcated operating-lever, and connecting it to the brake-bars near their outer ends, better leverage is obtained, and the pressure of the brake-shoes is more evenly distributed to the wheels on the opposite sides of the truck.

The weight of the entire car rests upon the center casting, d, and the end supports, e, 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 operating-lever.

When it is desired to set the brakes, the hand brake-wheel is partly or wholly released; or, if steam or a vacuum brake mechanism is employed, the pressure is lessened, so that the operating-lever may move inward toward the bolster and allow the weight of the car to be transmitted to the brake-shoes through the intervention of the brake-levers. At all times and under all conditions the weight of the car is supported on the brake-levers. When the brake-bars are drawn toward each other, the outer ends of the horizontal arms of the said levers, and also the bolster, are slightly elevated and held in such elevated position until the holding-power on the operating lever is removed, when the weight of the car-body forces the vertical arm of the brake-levers outward and the shoes against the wheels. The pressure of the brake-shoes against the wheels is regulated by varying the relative lengths of the horizontal and vertical arms of the brake-levers. In case that one or more cars should become separated from the rest of the train, and the steam or air brake couplings parted, the brakes would be automatically set and the cars brought to a full stop.

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 would have it understood that I do not limit myself to the exact construction shown and described, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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 a spring-board, the latter provided with equalizing-bars, of bell-crank brake-levers, the horizontal arms of which extend over and slightly beyond the bolster, stirrups connecting the outer ends of the horizontal arms to the equalizing-bars, brake-bars pivotally secured to the lower ends of the vertical arms of the bell-crank brake-levers, and brake-shoes adapted to be forced against the wheels by the said brake bars.

2. In a car-brake, the combination, with a car-truck, brake-bars, and means for operating the same, of brake-shoes suspended from the car-truck between the brake-bars and wheels, and guides or guards secured to the brake-bars near the ends thereof, and adapted to retain the brake-shoes in proper position, as described.

3. In a car-brake, the combination, with a vertically-movable bolster and a spring-board, the latter provided on its lower face with equalizing-bars, bell-crank brake-levers pivoted to the truck, stirrups connecting the horizontal arms of the said levers to the equalizing-bars, brake-bars pivotally secured to the vertical arms of the bell-crank brake-levers, guides or guards secured to the brake-bars, and brake-shoes suspended from the car-truck,



between the wheels and the guides or guards on the brake-bars.

4. In a car-brake, the combination, with a vertically-movable bolster and spring-bar, the latter provided with two equalizing-bars running diagonally across the same, of four bell-crank brake-levers, placed as shown, the horizontal arms of which pass over and slightly beyond the bolster, stirrups connecting the said arms to the equalizing-bars, and brake-shoes adapted to be operated by the vertical arms of the bell-crank brake-levers.

5. In a car-brake, the combination, with a vertically-movable bolster, spring-bar, two diagonal equalizing-bars provided with the grooves, as described, and the lugs for securing the equalizing-bars to the spring-board, of the bell-crank brake-levers, the horizontal arms of which pass over and slightly beyond the bolster, stirrups connecting the said arms to the equalizing-bars, and brake-shoes suspended

from the car-truck and adapted to be operated by the vertical arms of the bell-crank brake-levers.

6. The combination, with the angle-iron cross-beams, the beams  $D'$ ,  $D^2$ , and  $D^3$ , and the axle-boxes, of a vertically-movable bolster situated between the cross-beams, bell-crank levers pivotally secured to the upper faces of the cross-beams, the horizontal arms of which pass over and slightly beyond the bolster, equalizing-bars, stirrups, brake-bars, and brake-shoes suspended from the truck and operated by the brake-bars, substantially as set forth.

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

JOHN F. MALLINCKRODT.

Witnesses:

C. D. GREENE,

C. D. GREENE, Jr.