

No. 656,608.

Patented Aug. 21, 1900.

C. E. MOORE.
BRAKE MECHANISM.

(Application filed Dec. 23, 1899.)

(No Model.)

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FIG. 1

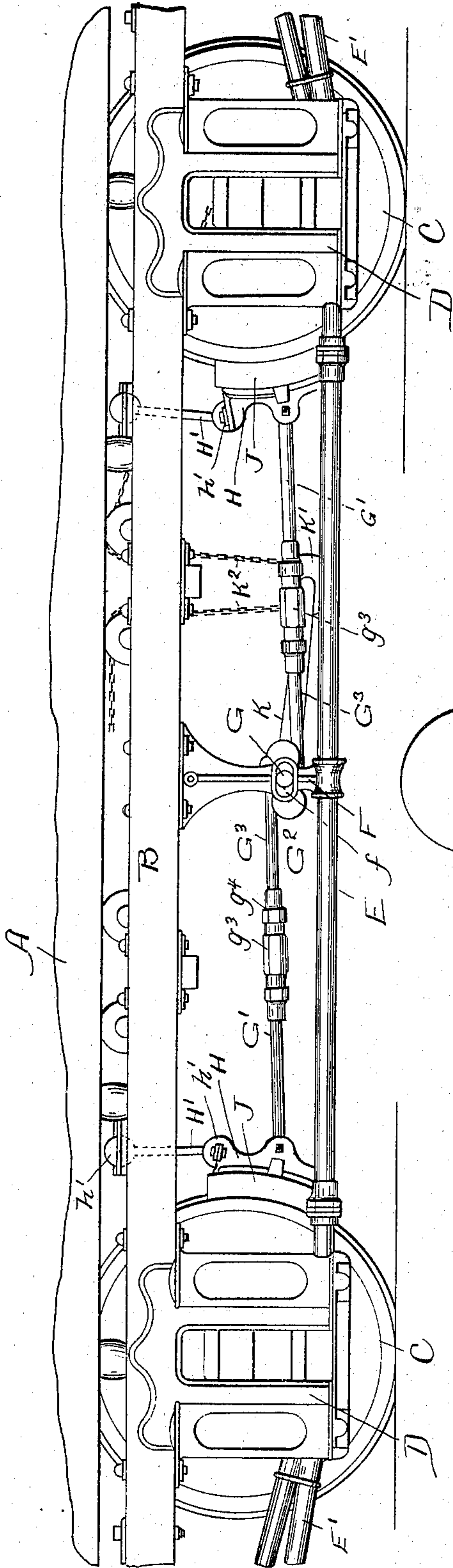
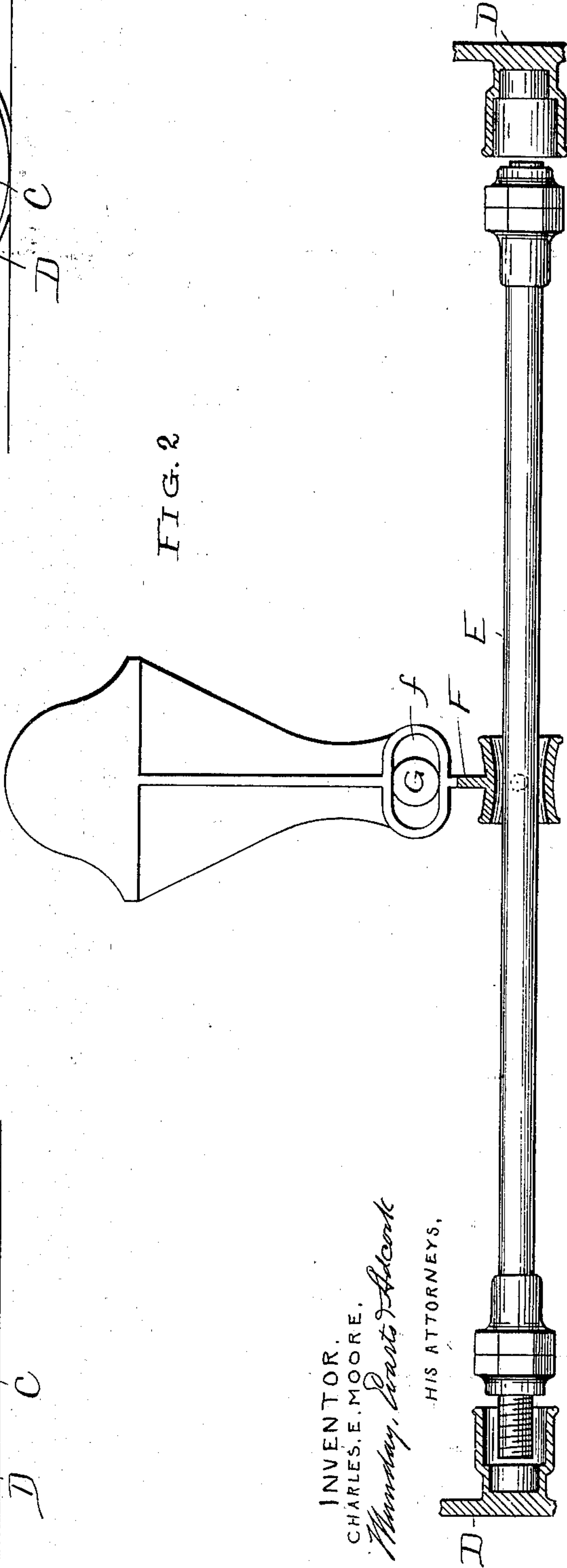


FIG. 2



INVENTOR.
CHARLES E. MOORE.
BY *Monday, East & Alcock*
HIS ATTORNEYS,

WITNESSES.
G. N. Salisbury.
G. N. Salisbury

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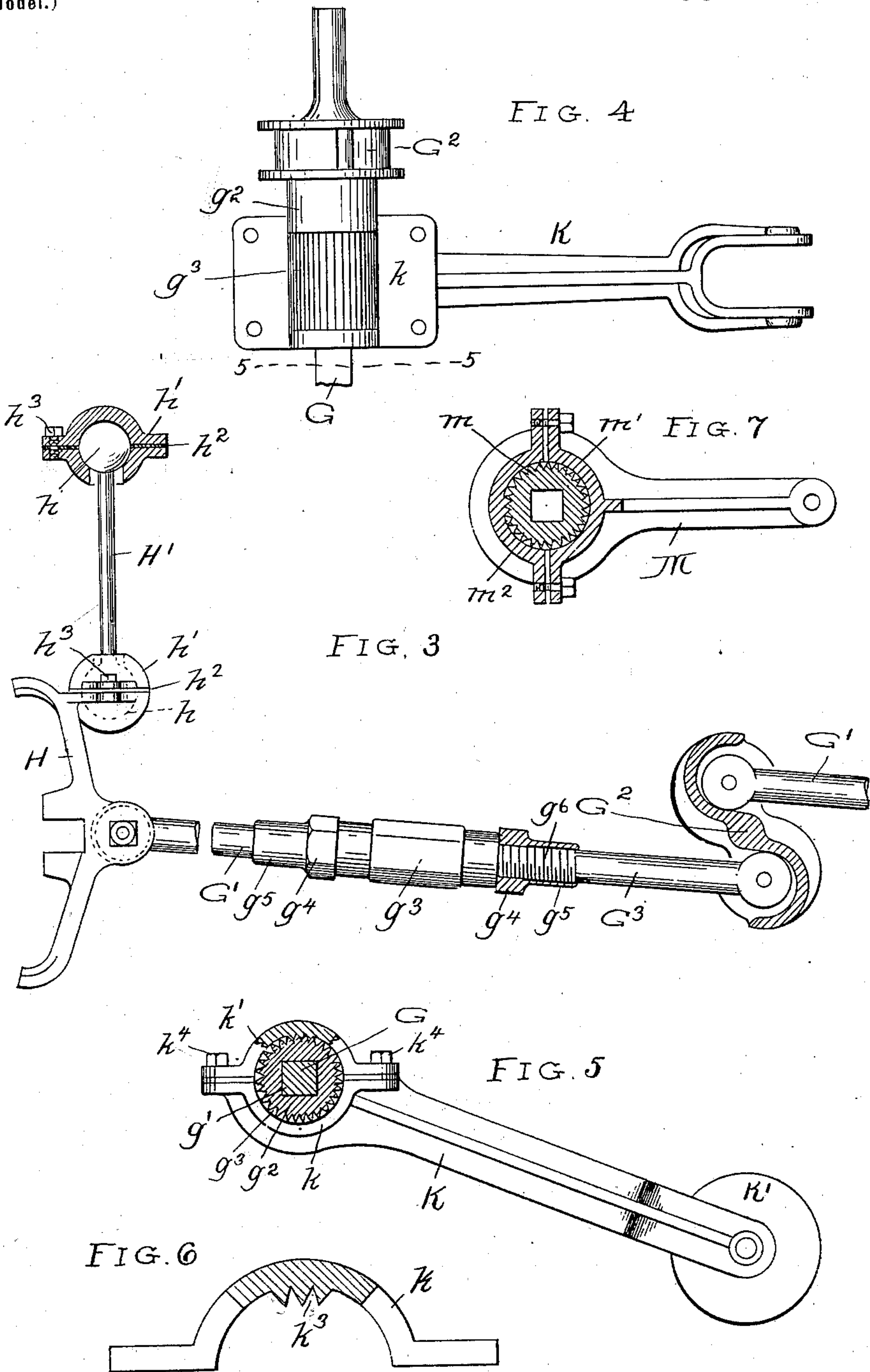
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WITNESSES,
G. W. Salisbury,
A. W. Munday.

INVENTOR,
CHARLES E. MOORE.
BY *Munday, Everts & Adcock*
HIS ATTORNEYS.

No. 656,608.

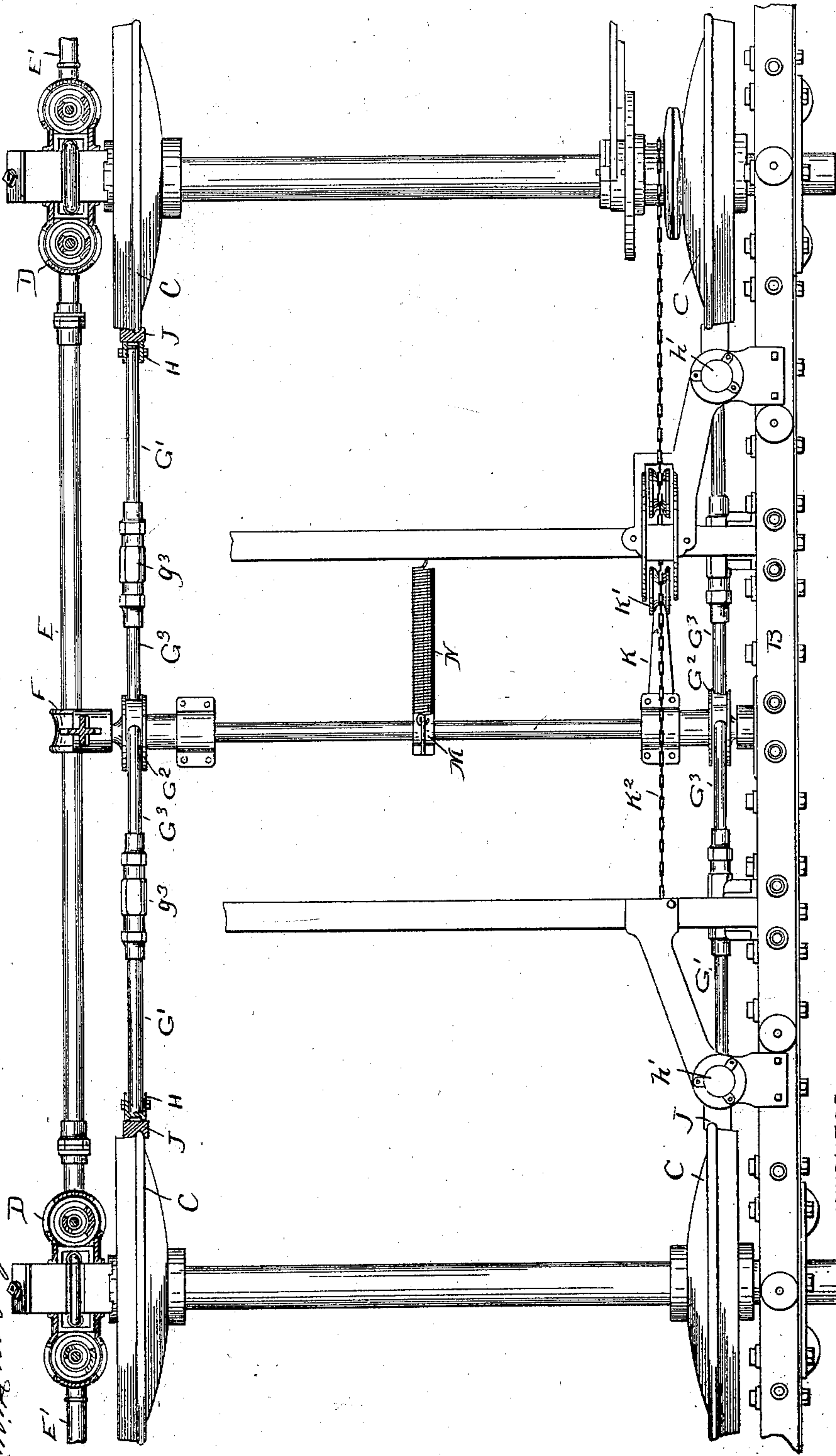
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(No Model.)

3 Sheets—Sheet 3.



WITNESSES.
E. M. Salisbury.
H. M. Monday.

INVENTOR.
CHARLES E. MOORE.
BY *Munday, Scott & Alden*
HIS ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES E. MOORE, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ELMYR A. LAUGHLIN, OF SAME PLACE.

BRAKE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 656,608, dated August 21, 1900.

Application filed December 23, 1899. Serial No. 741,365. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. MOORE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Brake Mechanism for Street-Railway and other Cars, of which the following is a specification.

My invention relates to improvements in brake mechanism of street-railway motor and other cars.

The object of my invention is to provide a brake mechanism for street-railway motor and other cars of a simple, efficient, and durable construction by means of which a perfectly-even pressure and wear of the whole contact-surface of each brake-shoe against its wheel may be at all times secured, by means of which the pressure may be perfectly equalized between all the shoes, and which will also enable the brake mechanism to be conveniently, quickly, and accurately adjusted from time to time as required to take up wear and secure a proper bearing of all the shoes against wheels and the proper freeing or clearing of the shoes from the wheels when the brake is not in action and by which the parts may be always maintained in proper adjustment for efficient action.

My invention consists in the means or mechanism I employ to accomplish this object or result—that is to say, it consists in the novel construction and novel combinations of parts herein shown and described, and specified in the claims, as will be readily understood by those skilled in the art from the detailed specification following and the accompanying drawings, forming a part of this specification.

In said drawings, Figure 1 is a side elevation of a street-railway car embodying my invention. Fig. 2 is a detail view, partly in vertical section, showing the slotted support or bearing for the brake-shaft. Fig. 3 is a detail view, partly in vertical section, showing the connection between the brake-shoe head and the brake-shaft and the mechanism for supporting the brake-shoe head. Fig. 4 is a detail plan view showing the brake-operating lever and its connection with the brake-shaft. Fig. 5 is a vertical section on line 5 5 of Fig. 4. Fig. 6 is an enlarged detail sec-

tional view of one of the parts shown in Fig. 5. Fig. 7 is a detail view, partly in vertical section, showing the brake kick-back or kick-spring lever and the means for connecting it with the brake-shaft; and Fig. 8 is a detail plan view.

In the drawings similar letters of reference indicate like parts throughout all the figures.

In said drawings, A represents the car-body or a portion thereof; B, the truck-frame upon which it rests; C, the wheels; D, the pedestals; E E', the truss-rods, and F the center struts or supports for the truss-rods E, which extend between the pedestals on each side of the truck-frame.

Each of the struts or supports F is provided with a slotted or oblong bearing *f* for the brake-shaft G to enable the brake-shaft at each end thereof to automatically and properly adjust itself between the wheels, and thus cause the brake-shoes on each side of the truck and the parts connecting the same with the brake-shaft to produce a proper and equal bearing of all four brake-shoes against the wheels, and to enable the brake mechanism as a whole to automatically adjust itself to any unequal wear between the different shoes.

H H are the brake-shoe heads, and J the brake-shoes secured thereto. In order to secure an even and proper fit or bearing of each brake-shoe against its wheel, and thus secure efficient and reliable operation at all times, each of the brake-shoe heads H is connected to its supporting-hanger H' by a ball-and-socket joint *h h'*, the supporting-hanger H' having also a similar ball-and-socket joint *h h'* at its upper end to connect it with the truck-frame B. The two parts *h' h'* of each socket have a yielding washer *h²*, of rubber or other yielding material, between them, so that in case of wear by tightening the bolt *h³*, uniting the two parts of the socket, the washer may yield enough to compensate for such wear. This ball-and-socket means of sustaining or supporting the brake-shoe head gives the brake-shoe head a perfectly free and unrestricted movement in all directions, which at all times secures a perfectly uniform and proper fit or bearing of each brake-shoe against its wheel, so that in applying the

brakes a perfectly-uniform wear on the whole contact-surface of each brake-shoe against its wheel is secured. Each of the brake-shoe heads H is connected to the tumbling-shaft or brake-shaft G by the brake-rod G' and connecting-lever G², the latter having a square socket g, fitting on the squared end g' of the brake-shaft.

K is the brake-lever, carrying the pulley K' and connected with and operated by the brake-chains K². The brake-lever K is adjustably secured on the connecting-lever G². The adjustable connection between the brake-lever K and connecting-lever G² preferably consists in a sleeve, hub, or collar g², formed integrally with or secured to the connecting-lever G² and provided with notches or serrations g³ on its outer periphery, around which fits a two-part cap or collar k k' on the brake-lever K, which cap or collar k k' has inside notches or serrations k³ on a small segment of its inner surface. By loosening the nuts k⁴ uniting the two parts k k' of the outer segmental notched collar secured to or formed integrally with the brake-lever, the brake-lever may be turned or adjusted to any position desired, and then by again tightening the nuts the two notched collars g² (on the connecting-lever) and k k' (on the brake-lever) will be firmly secured together in their adjusted position in respect to each other by the engagement of their notched portions. This enables the brake-lever to be very quickly and conveniently adjusted.

M is the kick-back or kick-spring lever on the brake-shaft, the same being connected to the kick-spring N, which is connected to the truck-frame and serves to free the brake-shoes from the wheels when the brakes are not applied. This kick-back or kick-spring lever is adjustably secured to the brake-shaft or tumbling-shaft G by an inside collar or sleeve m, having notches or serrations on its outer surface, and an outer two-part collar or sleeve m' m², having notches or serrations on a portion of its inner surface similar to the notched collars or sleeves above described for adjustably connecting the brake-lever to the connecting-lever by which the brake-shoes are connected with the brake-shaft. The inner collar or sleeve m is a split one to enable it to be tightened upon the brake-shaft, and thus held in position longitudinally by the clamping action of the two parts of the outer collar m' m². Owing to the slotted bearings for the two ends of the brake-shaft G in the supports F a perfect equalization of pressure between all the brake-shoes and all the wheels of the truck is at all times secured, while the ball-and-socket connection at the upper and lower ends of the hangers suspending or sustaining the brake-shoe head enables each brake-shoe to properly fit and bear throughout its whole surface of contact against its wheel, and at the same time said ball-and-socket connections, by the clamping action of the two-part sockets against the balls, prevent any loose

or joggling movement of the head and insures the head and shoe being maintained always in proper position for being pressed against the wheel. The elastic or compressible packing between the two parts of each socket enables a close fit to be always maintained between the ball-and-socket members of each ball-and-socket joint. The brake-connecting rod G', between the brake-shoe head and connecting-lever G², is made in two parts, the part G³ being adjustably connected to the part G' by a right-and-left-threaded connecting nut or sleeve g³, the same being prevented from being accidentally turned by jam-nuts g⁴ g⁴, having extended smooth or non-threaded sleeves g⁵ to protect the threads g⁶ of the connecting-rod from injury by bruising or rust. This enables the connecting-rods to be conveniently and quickly adjusted and without unnecessary delay to the car or line of street-cars and consequent inconvenience to the public.

As the ball-and-socket means for independently suspending or supporting each brake-shoe head operates to hold the head in position without any lost motion, the brake-shoe is enabled to be withdrawn by the kick-spring lever only a slight distance from the wheel, and at the same time maintained or held entirely free from the wheel without danger of riding or grinding against the wheel when the brakes are not applied, thus always enabling the brakes to be instantaneously applied at any time, as is frequently required in street-car service.

I claim—

1. The combination with a brake-shoe head, of a hanger for supporting or suspending the same furnished with a ball-and-socket joint to give the head a free and unrestricted motion in all directions and permit the brake-shoe to properly fit and bear against the wheel at all times when applied thereto and compensate for wear or lack of proper adjustment of parts, substantially as specified.

2. The combination with a brake-shoe head, of a hanger for suspending or supporting the same provided with a ball-and-socket connection between said hanger and brake-shoe and a ball-and-socket connection at the upper end of said hanger between the same and the truck-frame, each of said ball-and-socket connections comprising a ball and a two-part socket surrounding the ball, substantially as specified.

3. In a truck, the combination with a brake-shoe head, of a hanger for suspending or supporting the same having a ball-and-socket joint, the socket of said joint consisting of two parts or members secured together by bolts and provided with a packing of yielding material between to compensate for wear by tightening the bolts, substantially as specified.

4. In a truck, the combination with the brake-shoe heads, of hangers for independently supporting the brake-shoe heads, each

having a ball-and-socket joint, the brake-shaft, connecting rods and levers between the brake-shaft and brake-shoe heads, and slotted supports for the ends of the brake-shaft to insure a perfect equalization of pressure between the brake-shoes and wheels, substantially as specified.

5. The combination with the brake-shaft, of the brake-lever, an inner collar or sleeve fitting on the brake-shaft and provided with serrations on its outer surface, and an outer collar or sleeve integral with or secured fixedly to the brake-lever and provided with integral serrations on a short section of its inner periphery to adjust the brake-lever, substantially as specified.

6. In a truck, the combination with the brake-shaft, of the brake-lever, an inner collar or sleeve fitting on the brake-shaft and provided with serrations on its outer surface, an outer collar or sleeve secured to the brake-lever and provided with serrations on a short section of its inner periphery to adjust the brake-lever, a kick-spring lever, a collar on the brake-shaft having serrations on its outer periphery, and an outer collar secured to the kick-spring lever and provided with serrations on a segment of its inner periphery, substantially as specified.

7. The combination with brake-shaft, of a kick-spring lever, a serrated collar, and a segmental serrated collar for adjustably connecting the kick-spring lever to the brake-shaft, substantially as specified.

8. In a truck, the combination with the brake-shaft, of slotted supports for the ends of the brake-shaft, the brake-shoes and heads,

connecting rods and levers between the brake-shoe heads and brake-shaft, and a brake-lever having an adjustable connection with the brake-shaft, hangers for suspending or supporting the brake-shoes, and ball-and-socket connections between said hangers and the brake-shoes, substantially as specified.

9. In a truck, the combination with the brake-shaft, of slotted supports for the ends of the brake-shaft, the brake-shoes and heads, connecting rods and levers between the brake-shoe heads and brake-shaft, and a brake-lever having an adjustable connection with the brake-shaft, hangers for suspending or supporting the brake-shoes, and ball-and-socket connections between said hangers and the brake-shoes, said hangers having also ball-and-socket connections with the truck-frame, substantially as specified.

10. In a truck, the combination with the brake-shaft, of slotted supports for the ends of the brake-shaft, the brake-shoes and heads, connecting rods and levers between the brake-shoe heads and brake-shaft, and a brake-lever having an adjustable connection with the brake-shaft, hangers for suspending or supporting the brake-shoes, and ball-and-socket connections between said hangers and the brake-shoes, said hangers having also ball-and-socket connections with the truck-frame, and a kick-spring lever adjustably connected to the brake-shaft, substantially as specified.

CHARLES E. MOORE.

Witnesses:

L. E. CURTIS,
H. M. MUNDAY.