No. 795,348. PATENTED JULY 25, 1905.

G. L. FOWLER.

BRAKE RIGGING AND OPERATING DEVICE THEREFOR.

APPLICATION FILED JAN. 8, 1904. RENEWED MAY 26, 1905.

4 SHEETS—SHEET 1.

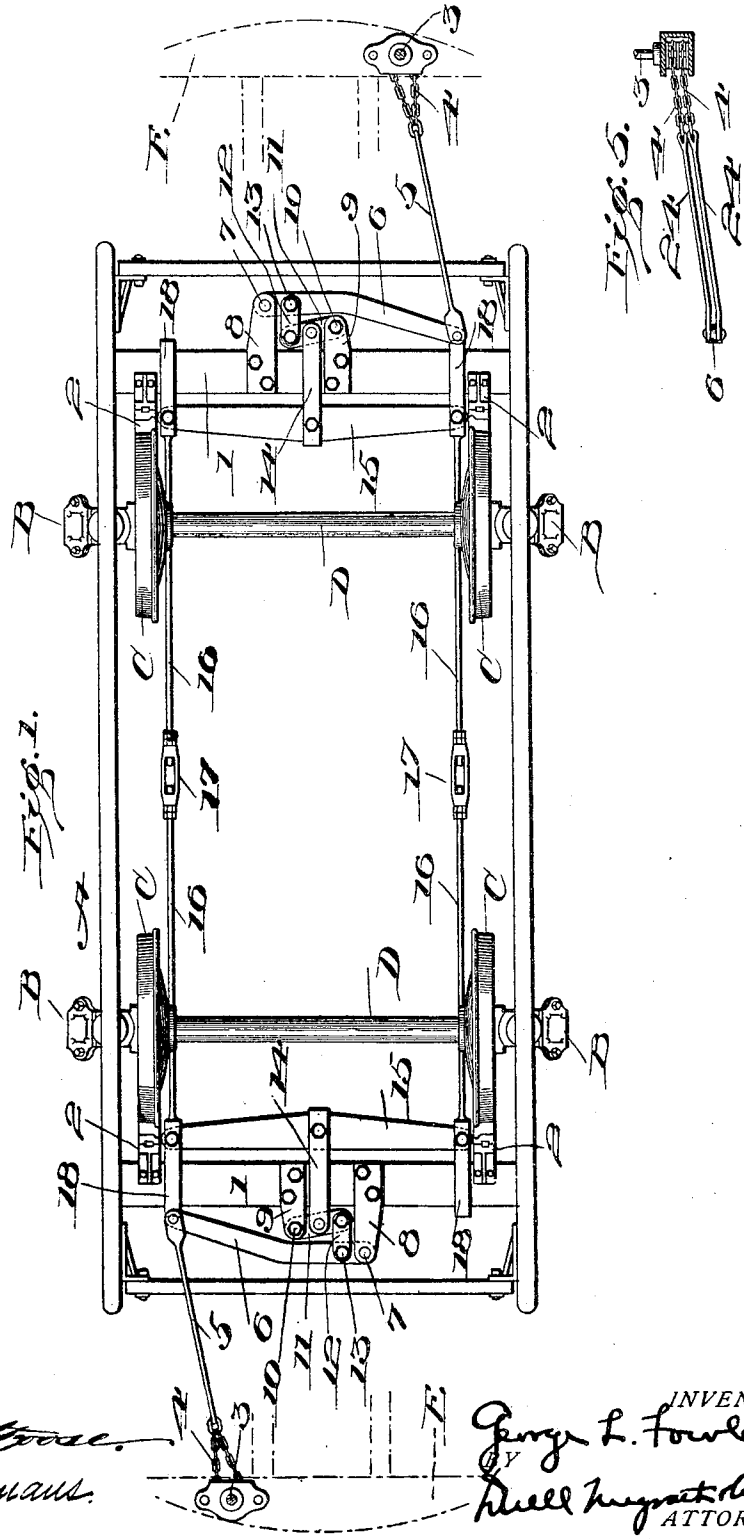


Fig. 1.

Fig. 5.

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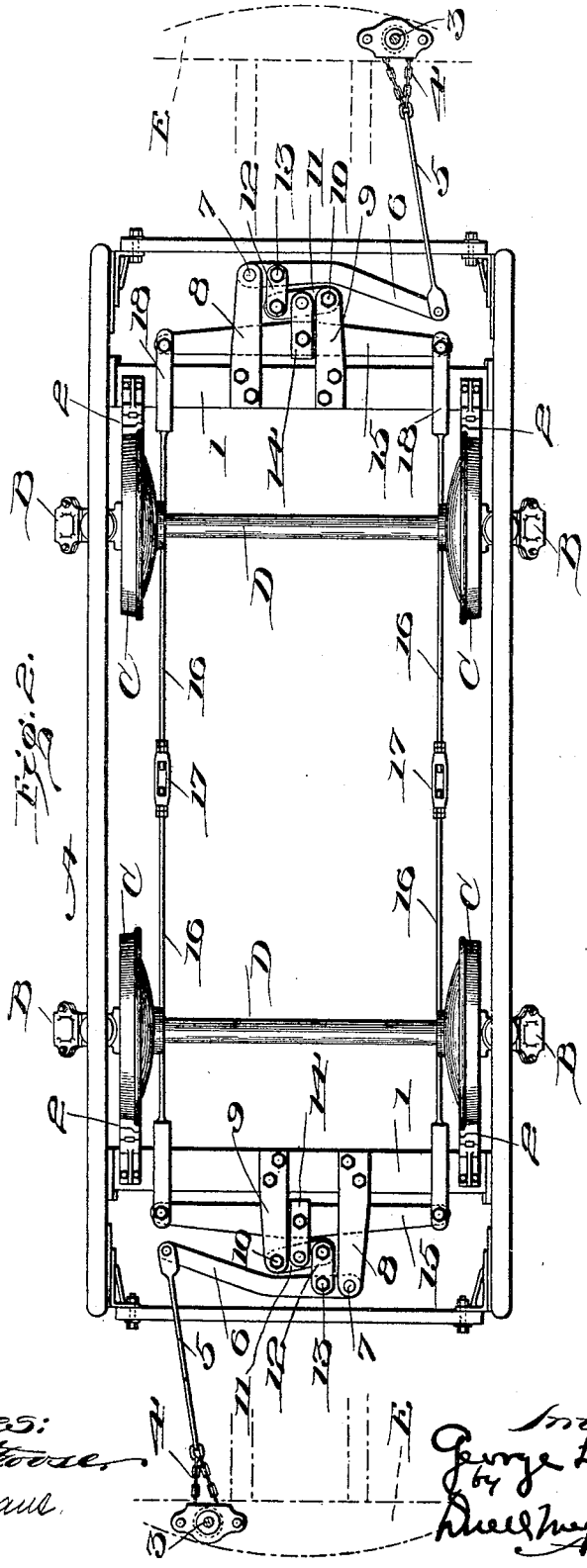


Fig. 2.

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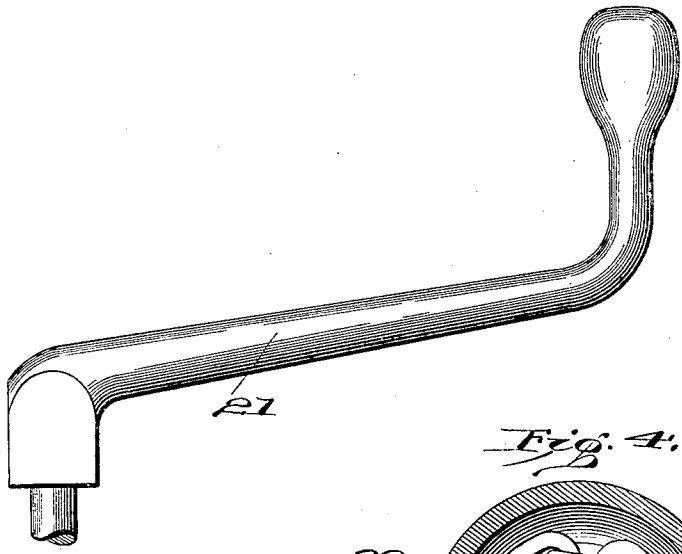
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Fig. 3.



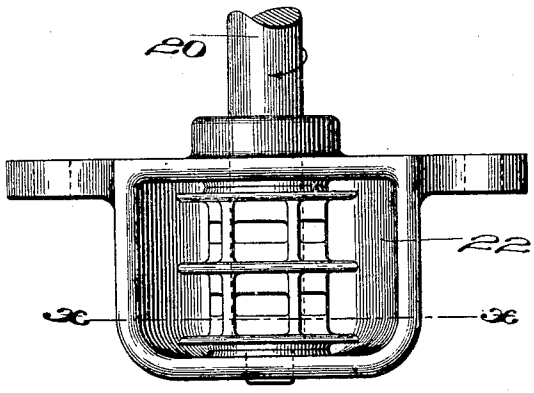
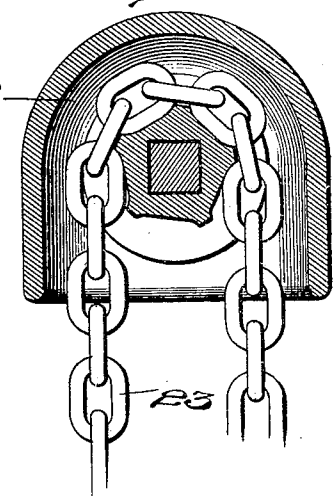


Fig. 4.



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4 SHEETS—SHEET 4.

Fig. 6.

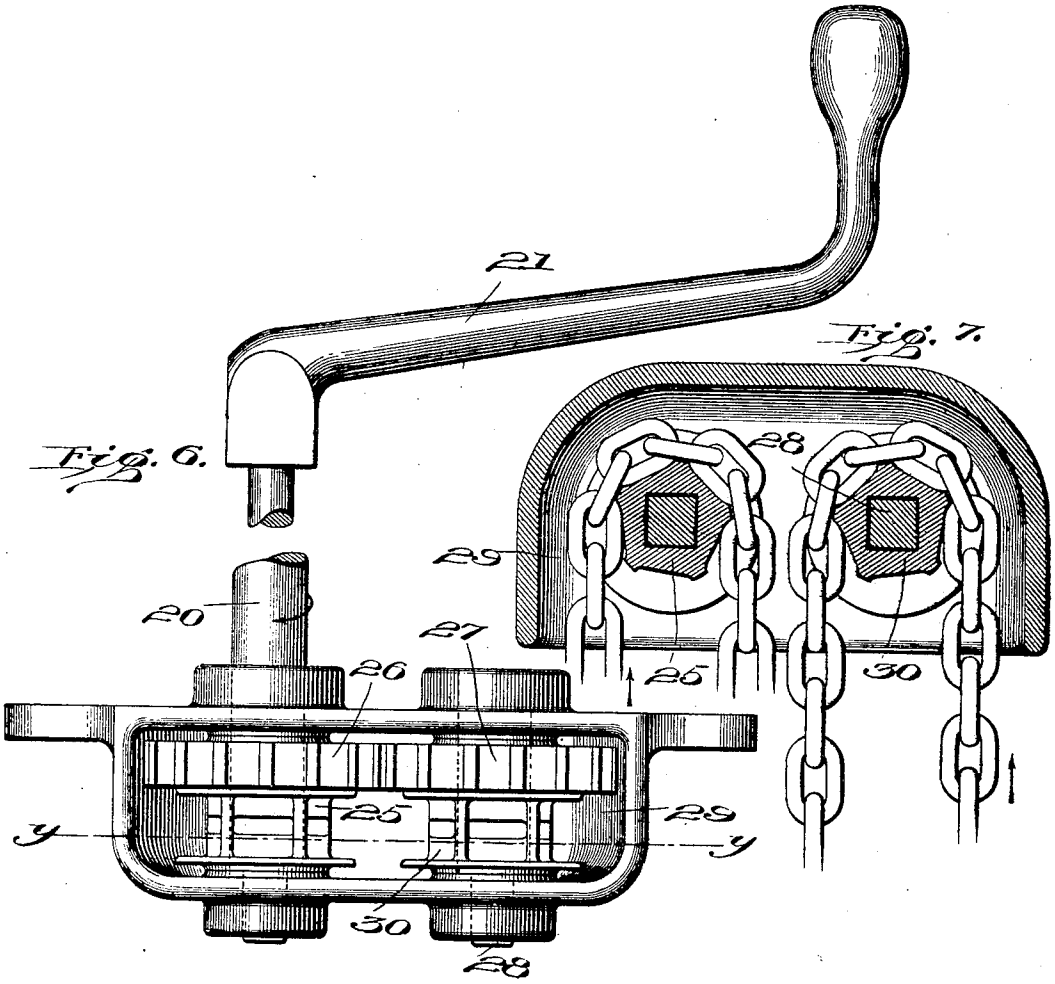


Fig. 7.

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UNITED STATES PATENT OFFICE.

GEORGE L. FOWLER, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE PECKHAM MANUFACTURING COMPANY, OF KINGSTON, NEW YORK, A CORPORATION OF NEW YORK.

BRAKE-RIGGING AND OPERATING DEVICE THEREFOR.

No. 795,348. Specification of Letters Patent. Patented July 25, 1905.

Application filed January 8, 1904. Renewed May 26, 1905. Serial No. 262,460.

To all whom it may concern:

Be it known that I, GEORGE L. FOWLER, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Brake-Rigging and Operating Devices Therefor, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to brake-rigging and operating devices therefor. Its object is to provide a brake-rigging and operating devices therefor of improved construction, resulting in an increase of durability and efficiency.

Other objects and advantages will be in part obvious from the following description and in part pointed out.

The invention consists accordingly in the features of construction, combinations of elements, and arrangement of parts, which will be hereinafter fully described with reference to the specific embodiment shown in the drawings, and the novel features thereof pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view, partly diagrammatic, showing a truck-frame, the wheels and axles, and a brake-rigging constructed in accordance with my invention. Fig. 2 is a similar view showing a slightly-modified form of construction. Fig. 3 is a side elevation showing a brake-staff with sprocket-wheels for operating a plurality of brake-chains. Fig. 4 is a section on line x x of Fig. 3, showing a part of one of the operating-chains. Fig. 5 is a detail showing the connections between the brake-lever and the operating-staff of Fig. 3. Fig. 6 shows a modification in the means for operating a plurality of lever-chains from the same staff. Fig. 7 is a section on line y y of Fig. 6, showing the chains in position.

Similar reference characters refer to similar parts throughout the several views.

Referring first to Figs. 1 and 2, the brake-rigging is illustrated therein in connection with a single truck; but it is obviously capable of use on double trucks and in a variety of relations. It has been found that owing to the increase in the weight of cars under modern conditions and their greater carrying capacity compared with the old equipment it is not possible with the rigging, now in use or heretofore known in the art to obtain a truck-shoe pressure properly corresponding to the weight on the wheels. This is, among other things, due to structural difficulties and the necessity of having sufficient strength of parts which prevents the increase of ratio between the operating-levers beyond certain limits.

One of the specific objects of the present invention is the provision of a means whereby the power applied may be compounded in its application to the brake-shoes without the necessity of increasing the size, weight, or form of the levers forming a part of the system independently of any compounding device in connection with the brake-staff or the operating device proper. As illustrating an embodiment of such means, in Fig. 1 is shown a truck-frame, (indicated by A,) said frame being supported upon axle-boxes B, the wheels and axles being indicated by C and D, respectively. Brake-beams 1 carry brake-shoes 2, said beams, with the shoes, being adapted to move toward or from the wheels to apply or release the brakes, as in the usual construction. The power for so moving the brake-beams is applied primarily through the brake-staff, (indicated at 3,) whence it is transferred, through the chain 4 and truck-rod 5, to a lever 6, which is the main power-applying lever. This lever is pivotally mounted, as at 7, on a strut 8, connected to the brake-beam 1. A second strut 9 projects outwardly from the brake-beam 1 on the same side as strut 8 and carries pivotally mounted thereon, as at 10, a floating lever 11, the other end of which is pivotally connected to the lever 6 by the short coupling 12, which is pivotally connected to the said lever 6 at the point 13, preferably closely adjacent the pivotal mounting thereof on the strut 8. Connected to the floating lever 11, preferably at the center thereof, is a link 14, which connects with the equalizer-bar 15, located in this construction inside the brake-beam. This equalizer-bar is connected by connecting-rods 16 with a similar equalizer-bar 15 at the other end of the truck, turnbuckles 17 being interposed in said rods 16, if desired, and the ends thereof being preferably extended in the form of straps 18, passing about the brake-beams 1 1 and acting as guides for the movement of the equalizer-bars and connecting-rods. The parts of the truck-rigging at each end of the truck are duplicates, so far as construction is concerned, and the same reference characters are used

for the same parts at the two ends of the truck. Their relative action during the operation of the truck will appear hereinafter. With the construction shown it is immaterial from which end of the car the brakes are to be applied. It will be obvious, however, that under certain conditions where it is desired to operate the trucks from only one end of the car, as in a single-ended car, the rigging at one end of the car may be correspondingly modified.

The operation of the rigging shown may now be explained. When the outer end of the lever 6 is moved toward the end of the car by turning the staff 3, it turns about the pivotal point 13 where the coupling 12 is connected thereto, and thus moves the strut 8 in the opposite direction until the shoes attached to the first brake-beam 1 come to a bearing against their respective wheels. As soon as this takes place the pivotal point 7 becomes the fulcrum of the lever 6 and the coupling 12 is drawn outward. As the brake-beam 1 and the strut 9 are already fixed, the coupling 12 pulling on the end of the lever 11 pulls said lever about its point of pivotal connection with the strut 9 and pulls outwardly the link 14, which carries with it the equalizer 15. This equalizer transfers the pressure to the equalizer at the other end of the car, where the parts of the brake-rigging then act in reverse order. The link 14 at this end is moved inwardly with the equalizer 15 and the lever 11 is pulled inwardly until it strikes the brake-beam 1, whereupon said lever acts as a means for conveying the pull of the equalizer to the brake-beam. The modification shown in Fig. 2 is similar in construction and operation, save that the equalizers in this form are located outside the brake-beams instead of inside, as at Fig. 1. One or the other of these constructions would be preferable, depending upon the character of the motors or other auxiliary parts to be carried by the truck-frame and the location of such motors or other parts.

The operation of the construction shown in Fig. 2 so far as the parts of the rigging at the end of the car at which the brakes are applied are concerned is the same as that shown in Fig. 1. At the opposite end, however, when the equalizer-levers are located outside the brake-beam the pull upon the equalizer-levers serves first to turn the floating lever 11, and with it the main lever 6, until the latter strikes against the strut 8, when said lever 6 serves as a beam to load the two struts 8 and 9 and through them the brake-beam. In both constructions it will be evident that the pressure utilized against the brake-beam 1 to apply the brakes at that end of the car at which the brakes are applied, as at the right in Fig. 1, is that due to the pressure upon both the struts 8 and 9, in the one case due to pressure of lever 6 and in the other due to the pressure of lever 11, while the pressure transmitted through the equalizer and connecting-rods to the other end of the car is that of the pull upon the link 14, which will be due to the compounding of the pressure upon the strut 9 and the pull of the coupling 12 upon the other end of the floating lever 11. Thus by the introduction of the floating lever I am enabled to compound the pressure applied to the brake-lever 6, so as to substantially double the power ultimately applied to the brake-shoes at both ends of the truck. A further advantage resides in the fact that owing to the use of the compound or floating lever 11 the strut 8 can be moved farther from the center of the brake-beams than in the ordinary arrangement. This permits of greater length for the lever 6, and with this comes the possibility of increasing the ratio between the two arms of the same. Such an increase is accompanied by a greater pull upon the coupling 12 and greater thrust upon the strut 8, and in this way there is a possibility of a further increase of pressure capable of being utilized against the brake-shoes.

Referring to Figs. 3 to 7, inclusive, I show two embodiments of means for actuating the brake-lever chains. These constructions enable the use of two or more independent chains, so that if one chain breaks or becomes defective for any reason the other may be still available for setting the brakes and the rigging prevented from being crippled or useless. As shown in Fig. 3, two sprocket-wheels are mounted directly upon the brake-staff 20, adapted to be actuated by the handle 21, said staff being journaled in suitable boxes in the fixture 22, which is to be bolted or otherwise secured to the car-platform E, as indicated by dotted lines in Fig. 1. Each of the sprocket-chains 23 is connected to the end of a brake-rod 24, which rods are independently connected to the lever 6. Thus there are two entirely independent connections from the brake-staff to the brake-lever, preventing the possibility of any accident owing to the non-setting of brakes unless both of these connections are broken.

In the constructions shown in Figs. 6 and 7 there is a similar plural connection between the brake-staff and the brake-lever. In this case, however, the spindle of the brake-staff is provided with a single sprocket 25, and a gear 26 upon said staff meshes with another gear 27 of the same size upon a short spindle 28, journaled in the same fixture 29 and provided with a similar sprocket 30. In this case I attain the advantages of the double-chain connection, while at the same time there is no increase in the power transmitted. Both the constructions shown in Figs. 3 and 6 are alike in that the plural connection is not accompanied by a change in the power transmitted. The compounding of power and the

increase of pressure may be efficiently and economically provided for by the compounding of the pressure through the floating lever already described, and accordingly no means of increasing the power at the brake-staff is required. The advantages of such an operating means as those shown in Figs. 3 to 7 will be obvious, moreover, as affording a simple, convenient, and efficient operating means especially adapted to be used with the power-compounding brake-rigging shown in Figs. 1 and 2.

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

1. In a brake-rigging, in combination with the wheels and axles, brake-shoes adapted to bear against the wheels, a brake-operating means, a brake-lever connected to be operated thereby, connections between said lever and said shoes for compounding the pressure exerted by said lever and an equalizer-bar adapted to transmit power to other braking mechanism.

2. In a brake-rigging, in combination with the wheels and axles, brake-shoes adapted to bear against the wheels, a brake-operating means, a brake-lever operated thereby, connections from said brake-lever whereby the brake-shoes may be operated, said connections including means for compounding the pressure upon the shoes independently of the main brake-lever but operated thereby and an equalizer-bar adapted to transmit power to other braking mechanism.

3. In a brake-rigging, in combination with the wheels and axles, brake-shoes adapted to bear against the wheels, a brake-beam carrying the brake-shoes for one set of wheels, a lever pivotally mounted upon said brake-beam, operating means connected to said lever, a second lever pivotally mounted on said brake-beam, a connection between said levers and an equalizing connection from said second lever for actuating the brakes at the other end of the truck.

4. In a brake-rigging, in combination with the wheels and axles, brake-beams carrying brake-shoes adapted to bear against the wheels, a main brake-lever pivotally mounted on each of said brake-beams, brake-operating means for each of said levers, a supplemental lever mounted on each of said brake-beams, connections between said main and supplemental levers at each end of the truck, and power-transmitting equalizing connections between the two supplemental levers at opposite ends of the truck.

5. In a brake-rigging, in combination with the wheels and axles, the brake-beams carrying brake-shoes adapted to bear against the wheels, a strut or support carried by one of said brake-beams, a lever pivotally mounted on said strut, actuating means for said lever, a second strut or support carried by said brake-beam, a lever pivotally mounted on said second strut, a connection between said first and second levers, an equalizer-bar, a connection between said equalizer-bar and said second lever intermediate the ends thereof, and a connection from said equalizer-bar for operating the brake-beam at the opposite end of the truck.

6. In a brake-rigging, in combination with the wheels and axles, a brake-beam at each end of the truck carrying brake-shoes adapted to bear against the wheels, a strut or support carried by each of said brake-beams, a main power-supplying lever mounted upon each of said struts, a supplemental strut or support carried by each of said brake-beams, supplemental levers pivotally mounted upon said supplemental struts, and connections from each of said supplemental levers to said main levers, equalizer-bars connected to said supplemental levers at each end of the truck, and power-transmitting connections between said equalizers.

7. In a brake-rigging, in combination with the wheels and axles, a brake-beam at each end of the truck carrying brake-shoes adapted to bear against the wheels, a strut or support carried by each of said brake-beams, a main power-supplying lever mounted upon each of said struts, a supplemental strut or support carried by each of said brake-beams, supplemental levers pivotally mounted upon said supplemental struts, and connections from each of said supplemental levers to said main levers, equalizer-bars connected to said supplemental levers at each end of the truck and inside the brake-beams, and power-transmitting connections between said equalizers.

8. In combination brake-shoes, a brake-staff, a pair of sprockets of substantially equal diameter adapted to be driven thereby in the same direction, force-compounding means adapted to apply said brake-shoes and a chain connecting each of said sprockets with said force-compounding means, said chains being substantially equally taut under normal conditions of use.

In testimony whereof I affix my signature in the presence of two witnesses.

GEORGE L. FOWLER.

Witnesses:
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