(No Model.) 2 Sheets—Sheet 1.

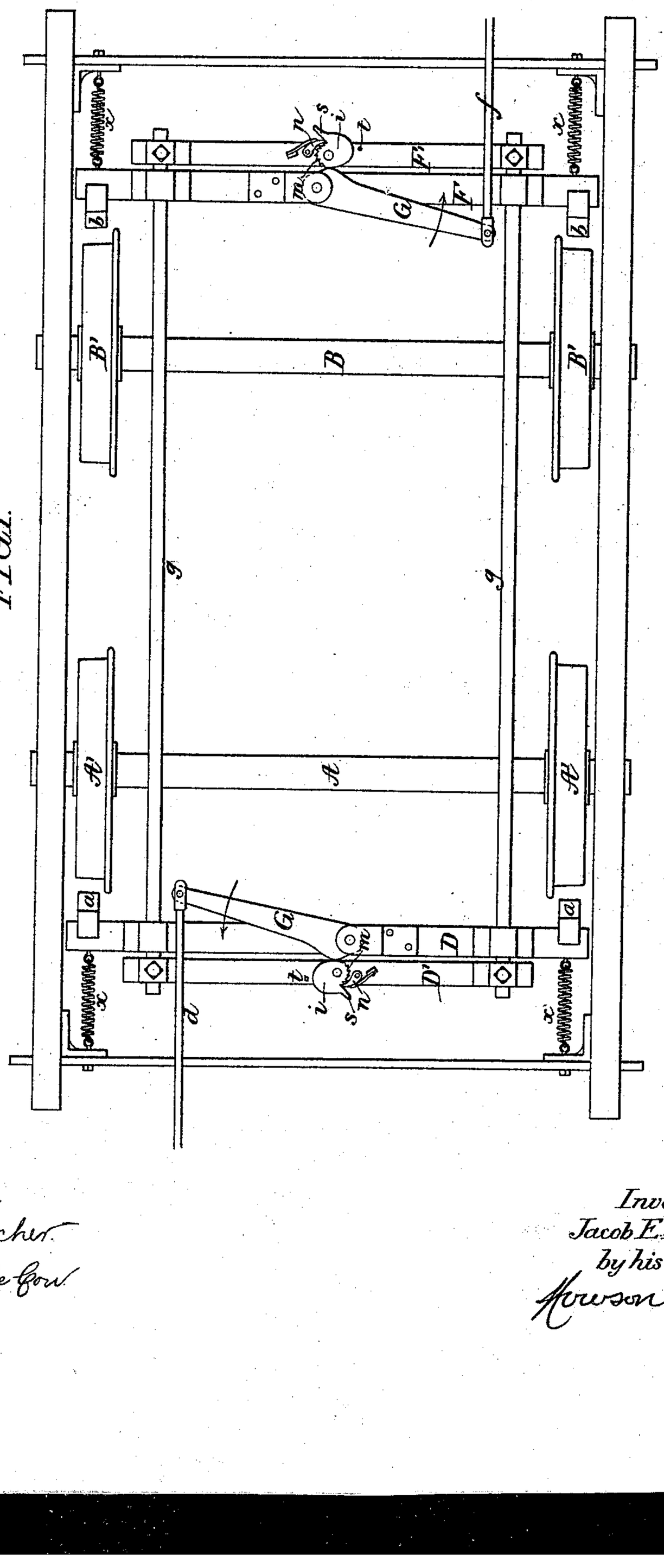
J. E. LOUGHRIDGE, Dec'd.

M. R. LOUGHRIDGE, Executrix.

SLACK ADJUSTER.

No. 545,084. Patented Aug. 27, 1895.

FIG. 1.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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SLACK ADJUSTER.

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FIG. 2.

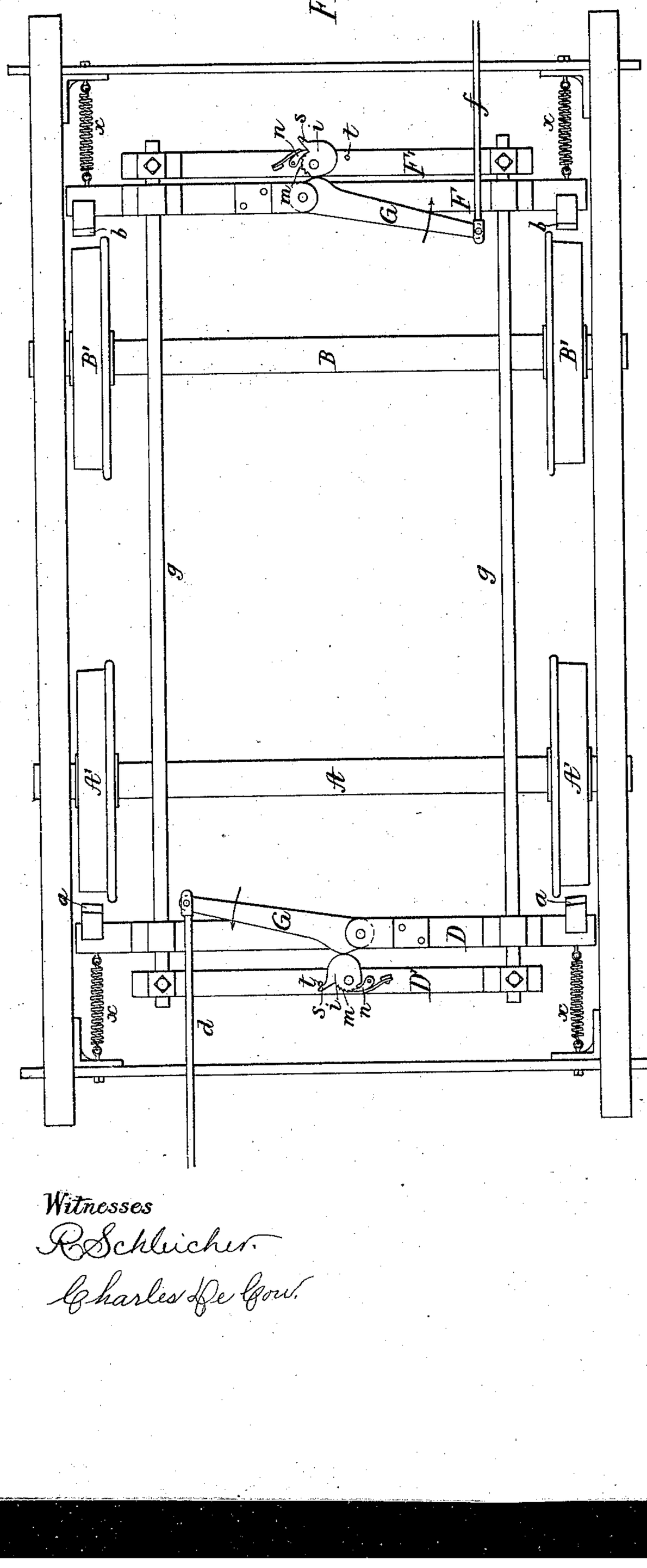
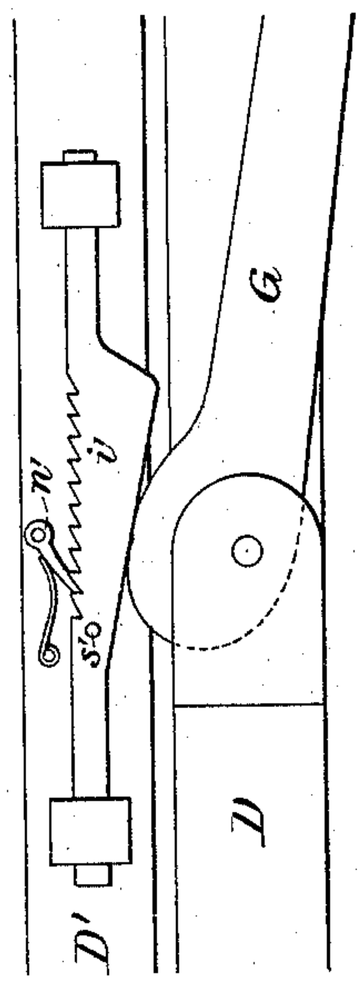


FIG. 3.



Witnesses
R. Schlicher.
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UNITED STATES PATENT OFFICE.

JACOB E. LOUGHRIDGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF FIVE-EIGHTHS TO J. WARREN COULSTON AND J. WARREN COULSTON, TRUSTEE, AND CHARLES WATSON, CHARLES O. BAIRD, AND ABRAHAM S. PATTERSON, OF SAME PLACE; MARY R. LOUGHRIDGE EXECUTRIX OF SAID JACOB E. LOUGHRIDGE, DECEASED.

SLACK-ADJUSTER.

SPECIFICATION forming part of Letters Patent No. 545,084, dated August 27, 1895.

Application filed September 24, 1894. Serial No. 523,927. (No model.)

To all whom it may concern:

Be it known that I, JACOB E. LOUGHRIDGE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Compensating Devices for Railway-Car Brakes, of which the following is a specification.

The object of my invention is to provide simple and efficient means for increasing the braking power and compensating for wear of the brake-shoes or slack in the brake-applying gear of brake mechanism of that character of which the well-known "Bemis" and "Peckham" brakes are examples. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan view of sufficient of a car-truck and braking mechanism of the type to which my invention relates to afford a proper understanding of the invention. Fig. 2 is a similar view showing some of the parts in a different position, and Fig. 3 is a view illustrating a slight modification of part of the invention.

A and B represent the two axles of the car carrying the wheels A′ and B′, as usual, and D and F represent the two brake-beams, the beam D having shoes *a* for acting upon the wheels A′, and the beam F having shoes *b* for acting upon the wheels B′. In connection with each of the brake-beams D and F is employed a supplementary beam D′ or F′, and hung to each brake-beam is a lever G, the lever of the beam D being connected by a rod *d* to the brake-operating shaft at one end of the car, and the lever of the beam F being connected by a rod *f* to the brake-operating shaft at the opposite end of the car, it being understood that this class of brake is intended mainly for application to street-cars having a brake-operating wheel or crank at each platform.

The supplementary beams D′ and F′ are connected together by rods *g*, and in the usual construction of braking mechanism the lever G of each brake-beam is connected to the corresponding supplementary beam by means of a link, so that pull in the direction of the arrow upon each rod *d* or *f* will cause the application of the brake-shoes to both sets of wheels. For instance, if the power is applied to the lever G of the brake-beam *d*, said brake-beam and its shoes will be forced toward the wheels A′ and the beam D′ will be forced away from said wheels, and this movement of said beam D′ will be transmitted by the rods *g* to the beam F′ and thence to the beam F, so as to draw the shoes of the latter into contact with the wheels B′. Springs *x*, each connected at one end to one end of the brake-beam and at the other end to a bracket on the truck-frame, serve to draw the beams D and F away from the wheels as soon as the pull upon the lever G is slackened. Braking mechanism of this character usually has no means for compensating for wear of the brake-shoes or slackness in other parts of the gear. Hence, after the shoes become worn the desired prompt and powerful application of the said shoes to the wheels of the car cannot be effected. My invention therefore has in view the provision of devices whereby wear or slack in any part of the brake-gear can be automatically compensated for and the surface of each shoe, when the brakes are off, caused to maintain a normal and predetermined distance from the tread of the wheel, whereby the brakes can be as quickly and as powerfully applied when the shoes are worn as when they are new and without any more extended movement of the brake-handle.

Instead of connecting the brake-lever G directly with the supplementary beam adjacent thereto, I mount upon said supplementary beam an eccentrically-pivoted disk *i*, constituting in effect a rotary wedge against which the lever bears at a point comparatively close to its fulcrum. Hence as the lever is moved in the direction of the arrow there will not only be a separation of the brake-beam and the supplementary beam due to such movement of the lever, but if the brake-shoes permit it a further separa-

tion due to the turning of the eccentric disk or rotary wedge *i* by contact with the bearing-face of the lever G, the latter being preferably curved or cam-shaped at the bearing-point, as shown, so as to facilitate such turning movement, and being, if desired, toothed or roughened for the purpose.

The eccentric disk *i* is provided with a segmental rack *m*, with which engages a spring-pawl *n*, so that any forward movement of the disk is caught and held by the engagement of said pawl with the rack, and the excess of separation of the main and supplementary brake-beams, which may be permitted by wear of the brake-shoes, is thus rendered permanent, and the shoes, when the brakes are off, are normally held in close relation to the wheel-treads, so that the brakes may be always applied with full power with a minimum movement—say a three-quarter turn—of the brake wheel or handle on the platform of the car, the parts being preferably so arranged that the movement of the brake wheel or handle terminates when it is in such position that the power can be most effectively applied to it. In order to prevent the highest point of the eccentric disk from passing beyond the point of contact with the brake-lever, I provide said disk with an arm *s*, which, by contact with a stop-pin *t* on the supplementary brake-beam, will prevent any further turning movement of the disk after its highest point has been brought to bear against the lever. Hence after the main and supplementary brake-beams have been separated to the maximum extent there can be no approach of said beams such as would permit the brake-shoes to swing farther away from the wheels. Irrespective of the compensating function of the eccentric disk or rotary wedge *i*, it serves as a means of materially increasing the power of the brake, the disk and lever having an action somewhat similar to that of a knee or toggle joint, whereby the beams D D′ F F′ are caused to be separated.

In order to insure the most effective action of the lever and disk it is necessary that they shall be held firmly in contact with each other at all times—that is to say, either when the brakes are applied or when they are off—and the springs *x* in the present combination perform this function in addition to their usual function of withdrawing the brake-shoes from contact with the wheels.

Although I prefer in all cases to use the eccentrically-pivoted disk or rotating wedge as the compensating device, other forms of the wedge may be employed without departing from the main features of my invention. For instance, in Fig. 3 I have shown a sliding wedge *i′*, suitably guided on the supplementary beam D′ and having an inclined face acted upon by the lever G, the back of the wedge having a rack engaged by a spring-pawl *n′*, whereby said wedge is held in its successive positions of advancement, a pin *s′* on the wedge serving, in connection with one of the guides for said wedge, to prevent excessive forward movement of the same.

I have shown my invention as intended for application to a car with brake-operating devices at each end, but it will be evident that it can be applied with equal advantage to cars intended to run always in the same direction and having brake-operating devices at one end only, the supplementary brake-beam at the front end of the car being in this case connected by the rods *g* directly to the main brake-beam at the rear of the car. It will also be evident that it is immaterial whether the lever G is hung to the main or supplementary beam, the compensating wedge being hung to or carried by the other beam.

As the springs *x* always serve to withdraw the brake-beams to the same extent the brake-operating wheel or handle is likewise always retracted to the same extent, so that it constitutes an indicator, showing to the driver or motorman the condition of the brake, and it is always in the same position when the brake is off, so as to be conveniently grasped.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination in car braking mechanism, of a main brake beam, a supplementary brake beam connected to braking mechanism at the opposite end of the car, a brake operating lever hung to one of said beams, and a movable wedge carried by the other beam and acted upon by said brake operating lever so as to be advanced thereby when slackness of gear or wear of the shoes permits such advance, substantially as specified.

2. The combination in car braking mechanism, of a main brake beam, a supplementary brake beam connected to braking mechanism at the opposite end of the car, a brake operating lever hung to one of said beams, a movable wedge carried by the other beam, and acted upon by said brake operating lever so as to be advanced when slackness of gear or wear of shoes permits such advance, and means for retaining said wedge in its successive positions of advancement, substantially as specified.

3. The combination in car braking mechanism, of a main brake beam, a supplementary brake beam connected to braking mechanism at the opposite end of the car, a brake operating lever hung to one of said beams, a movable wedge carried by the other beam and acted upon by said lever so as to be advanced when slackness of gear or wear of the shoes permits such advance, and resilient means whereby the brake beam is retracted on the release of the lever, said resilient means also serving to maintain the lever and the wedge constantly in contact with each other, substantially as specified.

4. The combination in car braking mechanism, of the main brake beam, the supplementary brake beam connected to the braking

mechanism at the opposite end of the car, a brake operating lever hung to one of said beams, a movable wedge carried by the other beam and acted upon by said brake operating lever so as to be advanced thereby when slackness of gear or wear of shoes permits such advance, means for retaining the wedge in its successive positions of advancement, and resilient means for retracting the brake beam and maintaining the wedge and lever constantly in contact, substantially as specified.

5. The combination in car braking mechanism, of a main brake beam, a supplementary brake beam connected to braking mechanism at the opposite end of the car, a brake operating lever hung to one of said beams, an eccentrically pivoted disk hung to the other beam and acted upon by said brake operating lever so as to be turned thereby when slackness of gear or wear of shoes permits such turning movement, and resilient means whereby the brake beam is retracted on the release of the lever, and said lever and disk are maintained constantly in contact with each other, substantially as specified.

6. The combination in car braking mechanism, of a main brake beam, a supplementary brake beam connected to braking mechanism at the opposite end of the car, a brake operating lever hung to one of said beams, an eccentrically pivoted disk hung to the other beam and acted upon by said lever so as to be turned thereby when slackness of gear or wear of the shoes permits such turning movement, means for retaining said disk in its successive positions of advancement, and resilient means for retracting the brake beam on the release of the brake lever, and for maintaining said lever and disk constantly in contact, substantially as specified.

7. The combination of the main brake beam, the supplementary brake beam connected to braking mechanism at the opposite end of the car, a brake operating lever hung to one of said beams and an eccentrically pivoted disk hung to the other beam and acted upon by said brake operating lever so as to be turned thereby when slackness or wear of the gear permits such turning movement, substantially as specified.

8. The combination of the main brake beam, the supplementary brake beam connected to the braking mechanism at the opposite end of the car, a lever hung to one of said beams, an eccentrically pivoted disk hung to the other beam and acted upon so as to be turned by said lever, and a rack and pawl for retaining said disk in its successive positions of advancement, substantially as specified.

9. The combination of the main and supplementary brake beams, the brake operating lever hung to one of said beams, a disk eccentrically pivoted to the other beam and acted upon by said lever so as to be turned thereby, and stops for restricting such turning movement of the disk, substantially as specified.

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

JACOB E. LOUGHRIDGE.

Witnesses:
FRANK E. BECHTOLD,
JOSEPH H. KLEIN.