

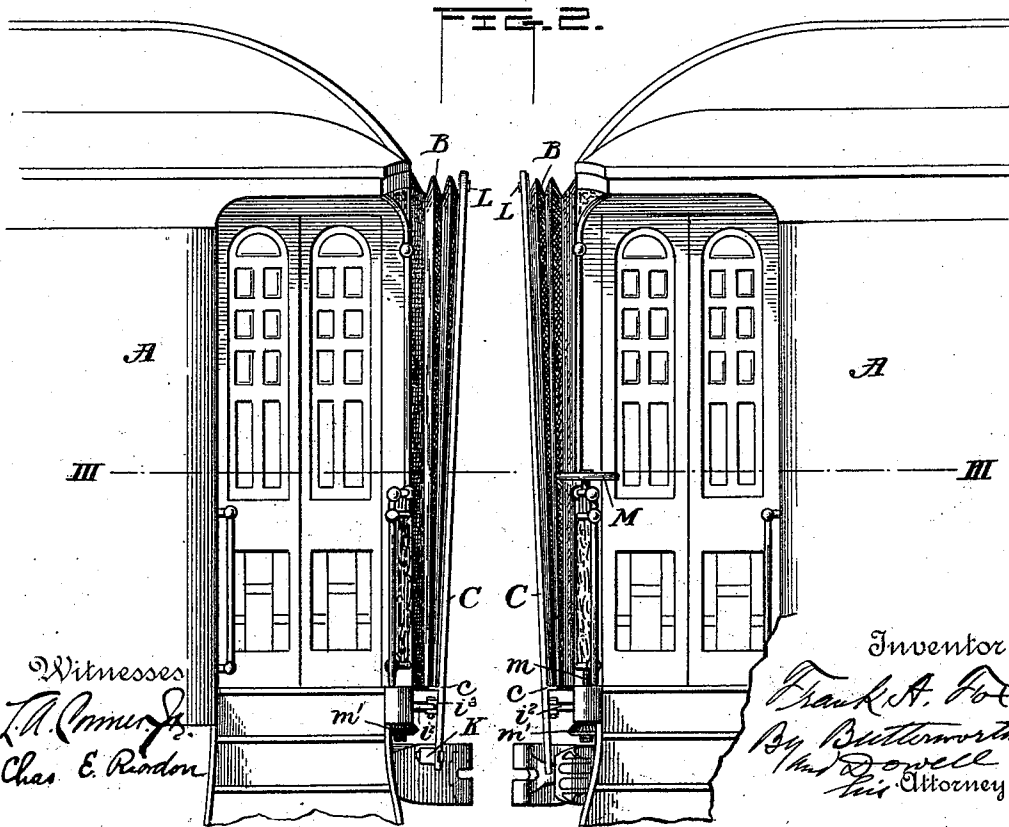
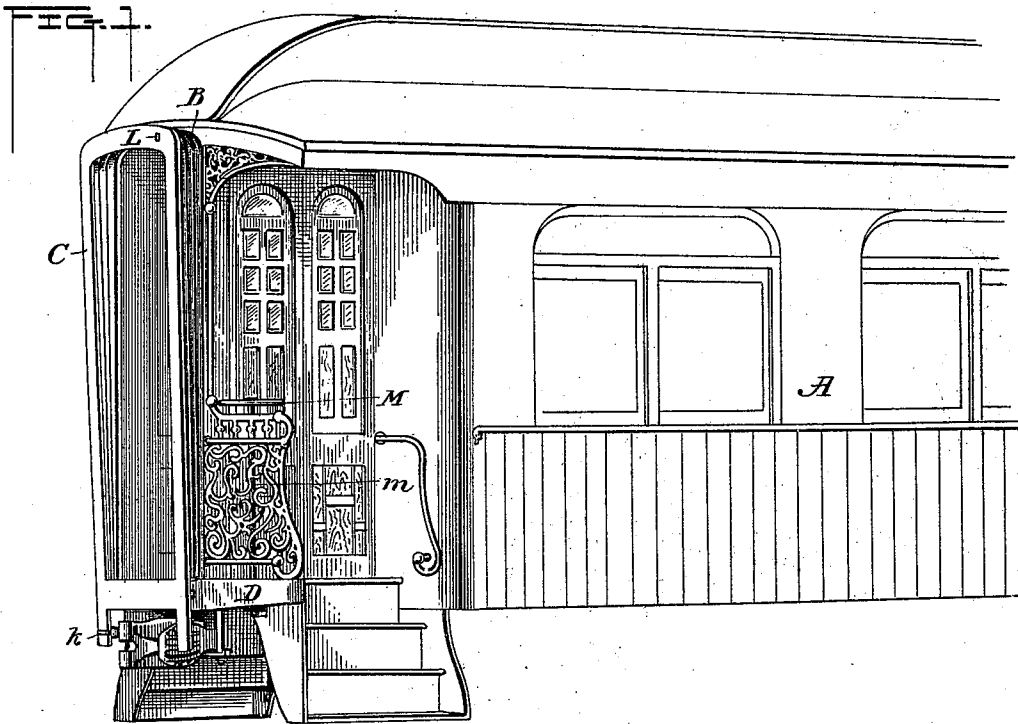
(No Model.)

3 Sheets—Sheet 1.

F. A. FOX.
VESTIBULE CAR.

No. 550,408.

Patented Nov. 26, 1895.



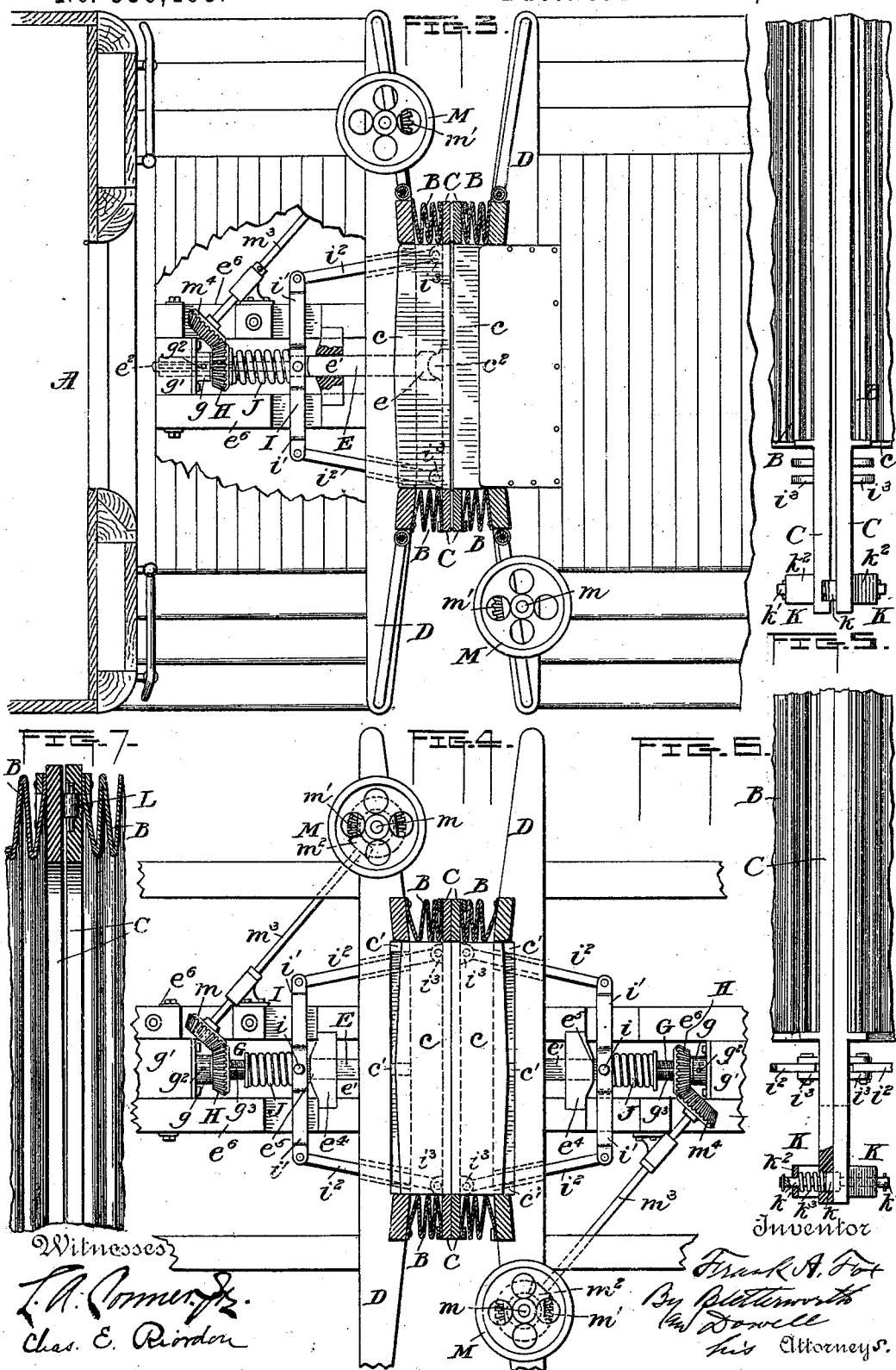
Witnesses
T. A. Cunningham
Chas. E. Rendon

Inventor
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By Buttermore
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his Attorneys.

3 Sheets—Sheet 2.

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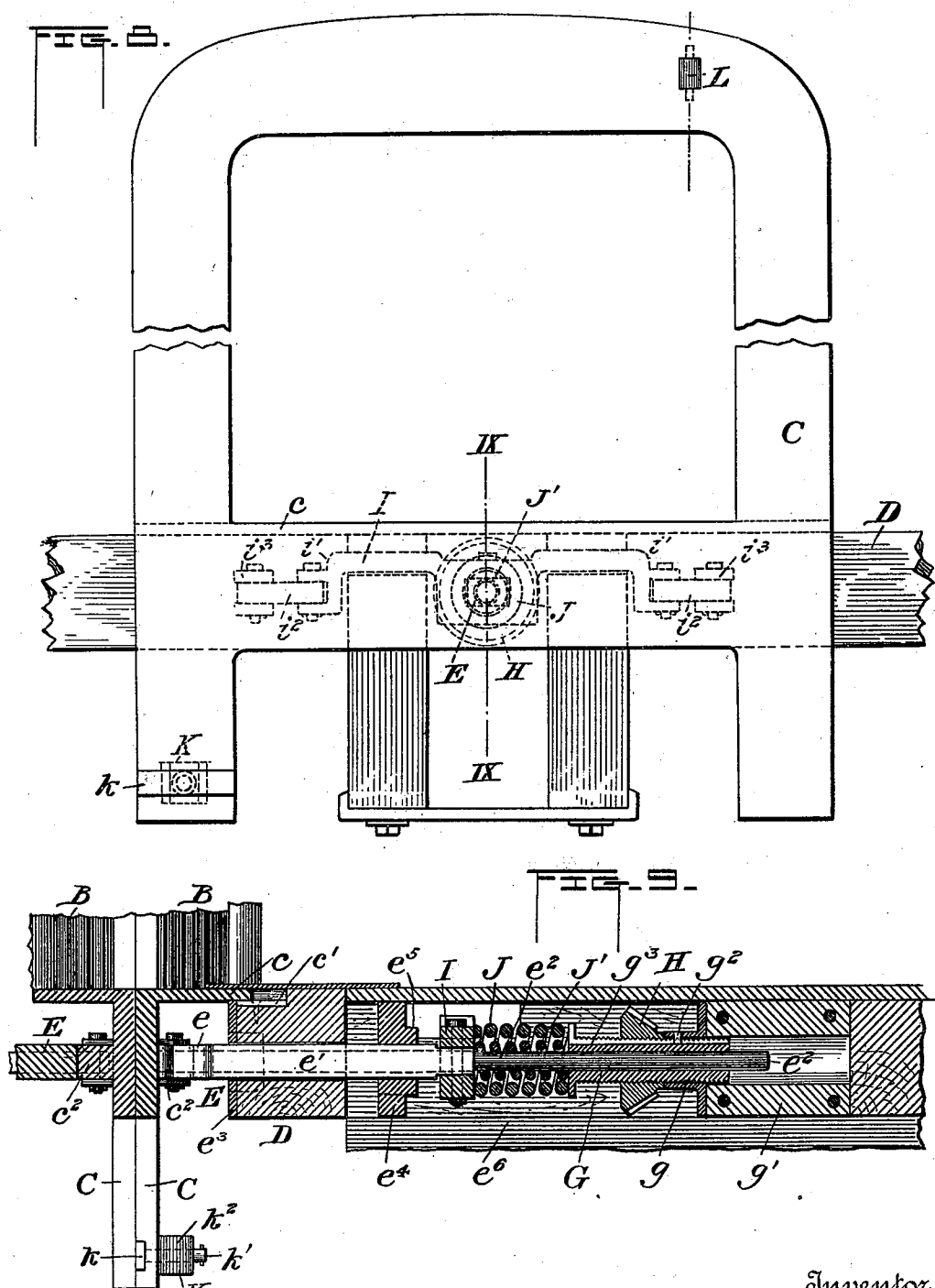
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3 Sheets—Sheet 3.

F. A. FOX.
VESTIBULE CAR.

No. 550,408.

Patented Nov. 26, 1895.



Witnesses

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UNITED STATES PATENT OFFICE.

FRANK A. FOX, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ANNIE A. ROBERTS, OF SAME PLACE.

VESTIBULE-CAR.

SPECIFICATION forming part of Letters Patent No. 550,408, dated November 26, 1895.

Application filed October 15, 1894. Serial No. 525,890. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. FOX, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Vestibule-Cars; 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 appertains to make and use the same.

This invention relates to railway-cars, but more particularly to cars having a vestibule to form a covered passage between two adjacent cars when the same are coupled together. Heretofore in the construction of cars of this character it has been proposed to provide either separate or continuous frame-plates or arch plates connected to the hood, which are supported at the upper and lower portions thereof by springs, which tend to force the said plates outwardly, thereby causing the plates to serve as buffers and to take considerable of the shock as the cars are coupled together, and depends simply upon the projecting force of the springs employed to accomplish this result and to keep the plates in frictional contact. The springs are necessarily limited in power and unequal in application, resulting in undue straining of the plates or of allowing the cars to separate at their tops to permit foreign matter to enter the passage-way, which is very objectionable, or not to hold the cars with sufficient rigidity as to prevent endwise movement of the cars, all of which tend to unnecessarily wear or strain some of the parts. Where the plates or frames are supported at their tops by spring-controlled connections located in the upper portion of the vestibule, there is a further objection on account of the strain which has to be taken at this point. It has also been proposed to connect the lower ends of the frame-plates to and let the same be controlled by the movement of the draw-bar of the coupler; but this has some of the objectionable features to which reference has just been made.

The primary object of my invention is to overcome these objectionable features by providing means, whereby the frame-plates may

be advanced forward or moved backward to vary at will the frictional contact between the said plates and to prevent the plates from taking any unnecessary shock as the cars are coupled together; to provide means whereby the frames may be placed and retained in proper alignment with respect to each other, so that the strains may be properly distributed throughout the several parts, and to provide means by which a rigid but yielding connection may be formed between the adjacent cars, so as to make the train continuous by preventing as much as possible the endwise movement of the cars.

Another object is to provide buffing-blocks at the lower portion of the frames to properly align the same should there be any uneven surface before the plates are brought in rigid contact with each other, and to provide anti-frictional rollers at the upper portion of the plates to allow for the "heeling" of the cars as the train passes around curves.

A further object is to provide simple, effective, and durable mechanism for accomplishing the above results.

With these and other objects in view the invention consists in the construction and combination of the several parts, as will be hereinafter more fully defined, and then more particularly pointed out in the claims at the end of the description.

Reference being had to the accompanying drawings, forming a part of this specification, Figure 1 is a perspective view of the body portion of a vestibule-car with the frame-plates and hood attached thereto. Fig. 2 is side elevation of portions of the abutting sections of two cars in position to be coupled together. Fig. 3 is a sectional plan view on the line III III of Fig. 2, illustrating the cars coupled together and the mechanism for advancing the frame-plates. Fig. 4 is a sectional plan view similar to Fig. 3, with the exception that the vestibule-flooring is removed to illustrate in elevation the mechanism for moving the plates, the latter being shown in rigid frictional contact. Fig. 5 is a fragmentary side elevation of the lower portion of the plates and hood in the position shown in Fig. 3 before the same are brought together. Fig. 6 is a view similar to

Fig. 5, with the plates in rigid contact. Fig. 7 is a fragmentary sectional view of the upper portion of the plates, illustrating the means employed for permitting the cars to heel, the separation of the plates being exaggerated to more clearly represent the function of the antifrictional rollers. Fig. 8 is an enlarged front elevation of the frame-plate, and Fig. 9 is a vertical sectional view on the line IX IX of Fig. 8.

Referring to the accompanying drawings, A may designate a car of suitable construction, having preferably a vestibule of any preferred or well-known form. To the forward portion of the car is secured a suitable collapsible hood B, which forms an arch or passage in front of the vestibule and has a frame-plate C secured thereto, the upper portion of said frame-plate being held in place by the hood, while the lower portion is supported by an outwardly-extending threshold-plate c , secured thereto or formed integrally therewith. This threshold-plate rests upon a plate or series of short plates c' , arranged in a recess in the buffer-beam or car-sill D, and forms a support for said frame-plate in such manner as to preferably throw the upper portion slightly forward, so that the top will always tend to remain closed when the cars are coupled. The frame-plate or other movable body is provided with a lug or projection c^2 , having a rounded outer or semicircular end, against which the recessed end e of the rod or stem E is adapted to rest and have a bearing and forms the center of oscillation of said frame-plate.

The rod E is preferably provided with a rectangular portion e' and a reduced end or rod portion e^2 and is arranged to pass through the buffer-beam D. This rod has its forward bearing in the plate e^3 , secured to the forward portion of the beam or bolster D and in the bearing or block e^4 , the latter having a straight rear edge e^5 and being secured to the sills e^6 , extending rearwardly from said beam.

The reduced portion e^2 of the rod E passes through and is slidably arranged in a hollow sleeve G, provided with an exterior threaded surface, and has a suitable bearing g , which is secured to a block g' , arranged between the sills e^6 , as best shown in Figs. 4 and 9. Depending from the bearing g is a spline or feather g^2 , which engages a keyway g^3 in the sleeve G and prevents rotation of the same, but causes the sleeve to advance or recede as the internally-threaded bevel-gear H, arranged on said sleeve, is rotated in one direction or another, as will presently appear. To the portion e' of the rod is pivotally secured by the pintle an equalizing or aligning bar I, against which abut one end of the main spiral spring J and the auxiliary spring J', both surrounding the portion e^2 of the rod E and having their other ends abutting against the face of the sliding sleeve G. The auxiliary spring tends to resist any slight shocks and to assist the main spring in resisting the separation of

the frame-plates when two cars are coupled together.

The equalizing or aligning bar I has the outwardly-extending arms i' i' provided with slotted ends, to which are pivotally secured the levers i^2 i^2 . These levers pass through slots in the car-sill D and have their opposite ends pivotally secured to lugs or projections i^3 i^3 , located on the frame-plates C, and, together with the bar I, serve to align the plates C, yet permit the same to move in an arc with the lug c^2 as the center. The forward portion of the bar I as it abuts against the straight edge e^5 of the bearing e^4 will further serve to align said bar, and consequently the frame-plate. Should there be an uneven surface in the frame-plates or a tendency of the same to cant as the same are brought together, I provide buffers K, located on depending portions of the frame-plates C, as best shown in Fig. 6. These buffers comprise a buffing plate or bar k , having a stem k' , which passes through an aperture in the casing k^2 , arranged on the rear of the frame-plates, the said stem having a spiral spring k^3 , surrounding the same and tending to normally press the buffer-plate in advance of the front surface of the frame-plates. The buffers also serve to provide a yielding surface to the lower portion of the frame-plates when the same are brought together.

When the frame-plates are rigidly held together, the parts are considerably strained by the tendency of the parts to separate at the top as the cars pass around a curve, or if not sufficiently rigid to prevent the rubbing of the opposed faces these soon become considerably worn or roughened, thereby materially diminishing the efficiency of the joint. To prevent this wearing or straining of the parts of the frame and hood, I provide an antifrictional roller or rollers L, arranged to rotate in a recess in the upper portion of the frame-plate, the outer surface of the roller extending just sufficiently to separate the upper surfaces of two opposed plates, but not to permit the entrance of foreign matter between the same. This construction permits the cars to heel over, and yet allows the cars to be rigidly bound together.

M is a hand-wheel secured to a vertical rod m , arranged in suitable bearings and carrying a bevel-gear m' at the lower end thereof, which meshes with a gear m^2 , the latter being secured to a rod m^3 , which is journaled in proper bearings and which carries a bevel gear m^4 , arranged to mesh with the gear H and by which the latter is rotated. The means for operating the gear H may, however, be of any suitable construction or arranged in any desired position, but ordinarily I prefer to use the construction shown.

The operation of the parts will be readily understood from the foregoing description. It will be seen, should the parts be in the position shown in Fig. 3, in which the cars are coupled together, that by rotating the hand-

wheels M the gears H will be rotated through the shafts m , gears m' , gears m^2 , rods m^3 , and bevel-gears m^4 . The rotation of each gear H in one direction will cause the sleeve G, with which it is engaged, to advance by the action of the spline g^2 in the keyway g^3 of said sleeve. The advancing of the sleeve G tends to compress the springs J and J' between the bar I and said sleeve, thereby advancing the rod E, and consequently the frame-plate C, the bar I and the rods i^2 i^3 serving to properly align the frame-plates, though this is materially aided by the square abutting surface e^5 of the block and bar I when the same are brought together. The reverse movement of the bevel-gear H causes the sleeve G to move backward, thereby releasing the compression of the springs, when the frame-plates may slide or be forced back to their former position. This construction permits the frictional contact between the frame-plates to be varied and serves to rigidly hold the two cars together, yet allowing the proper movement of the same at all times.

I do not desire to confine myself to the exact construction shown, as I might vary this somewhat without departing from the spirit of my invention.

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

1. In a vestibule railway car, the combination with a frame-plate, of a centrally arranged slidable rod forming the center of oscillation of said frame-plate, an aligning or equalizing bar pivotally connected to the rod and also connected to the frame-plate on opposite sides of said rod, an exteriorly threaded sleeve forming a bearing for one end of the rod; said sleeve being provided with a key-way, a spring interposed between the sleeve and the equalizing bar, a spline engaging the key-way to prevent the rotation of said sleeve,

an internally threaded gear which engages the sleeve, together with means for rotating the gear, substantially as described.

2. In a vestibule railway car, the combination with a frame-plate, of a centrally arranged slidable rod pivotally connected to said frame-plate and forming the center of oscillation thereof, an equalizing or aligning bar pivotally connected to the rod, levers connected to the frame-plate and to the equalizing bar on opposite sides of said rod; said sleeve being provided with a key-way, a spring interposed between the sleeve and the equalizing bar, a spline engaging the key-way to prevent the rotation of said sleeve, an internally threaded gear wheel engaging the sleeve, together with means for rotating the gear, substantially as described.

3. The combination with a movable frame-plate, of a bar pivotally connected to the frame-plate by a pair of levers, a sleeve having an externally threaded surface and provided with a key-way, a spline engaging the key-way, a spring arranged between the sleeve and the bar, an internally threaded gear wheel engaging the sleeve, together with means for rotating the gear, substantially as described.

4. In a railway car, a frame-plate having an anti-friction roller or rollers at the upper portion of the front or abutting surface thereof, substantially as and for the purpose set forth.

5. In a railway car, a frame-plate having a buffer or buffers arranged at the lower portion of the front or abutting surface thereof, substantially as described.

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

FRANK A. FOX.

Witnesses:

CLIFFORD C. ROBERTS,
ROBERT LENNOX.