

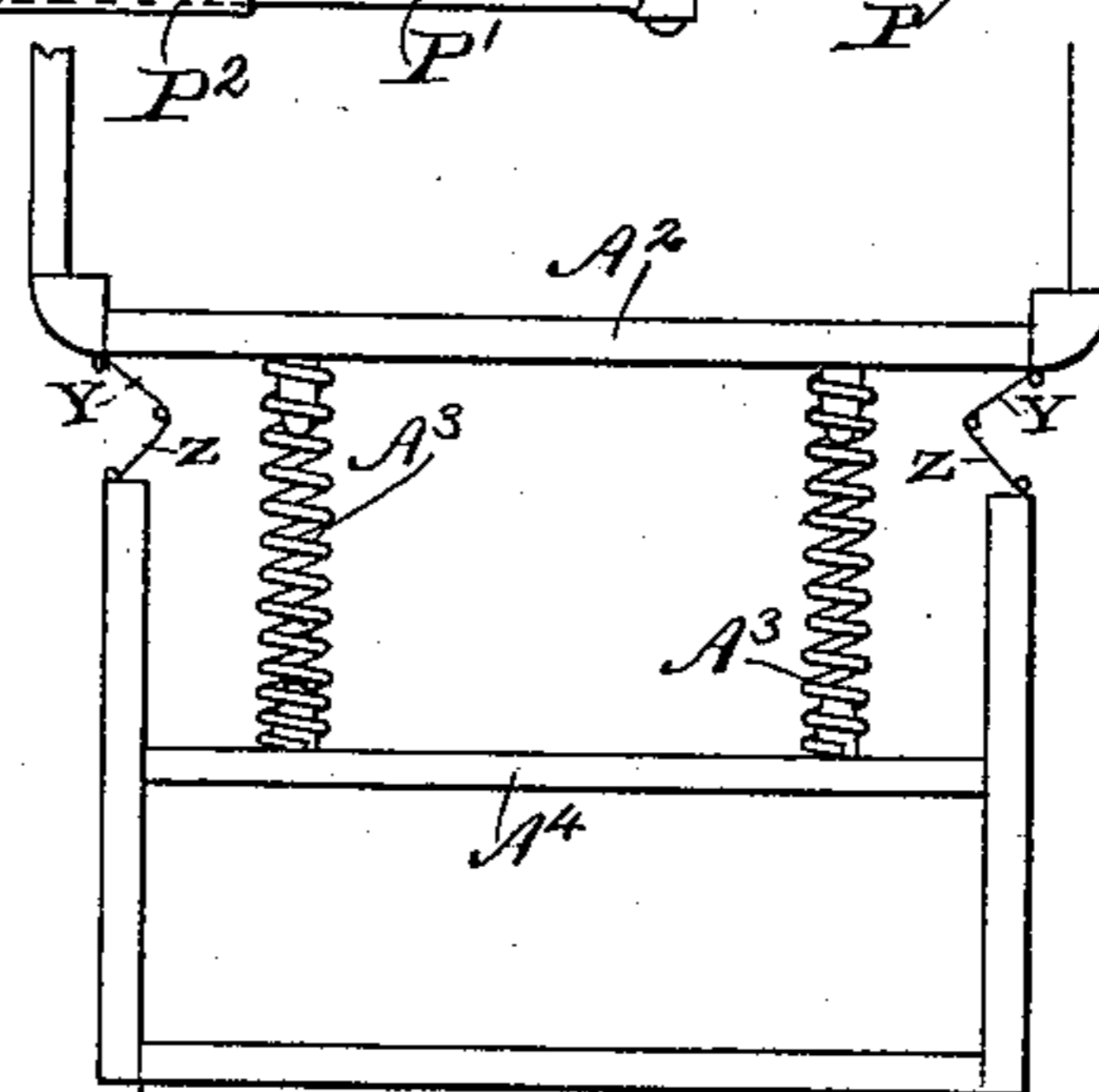
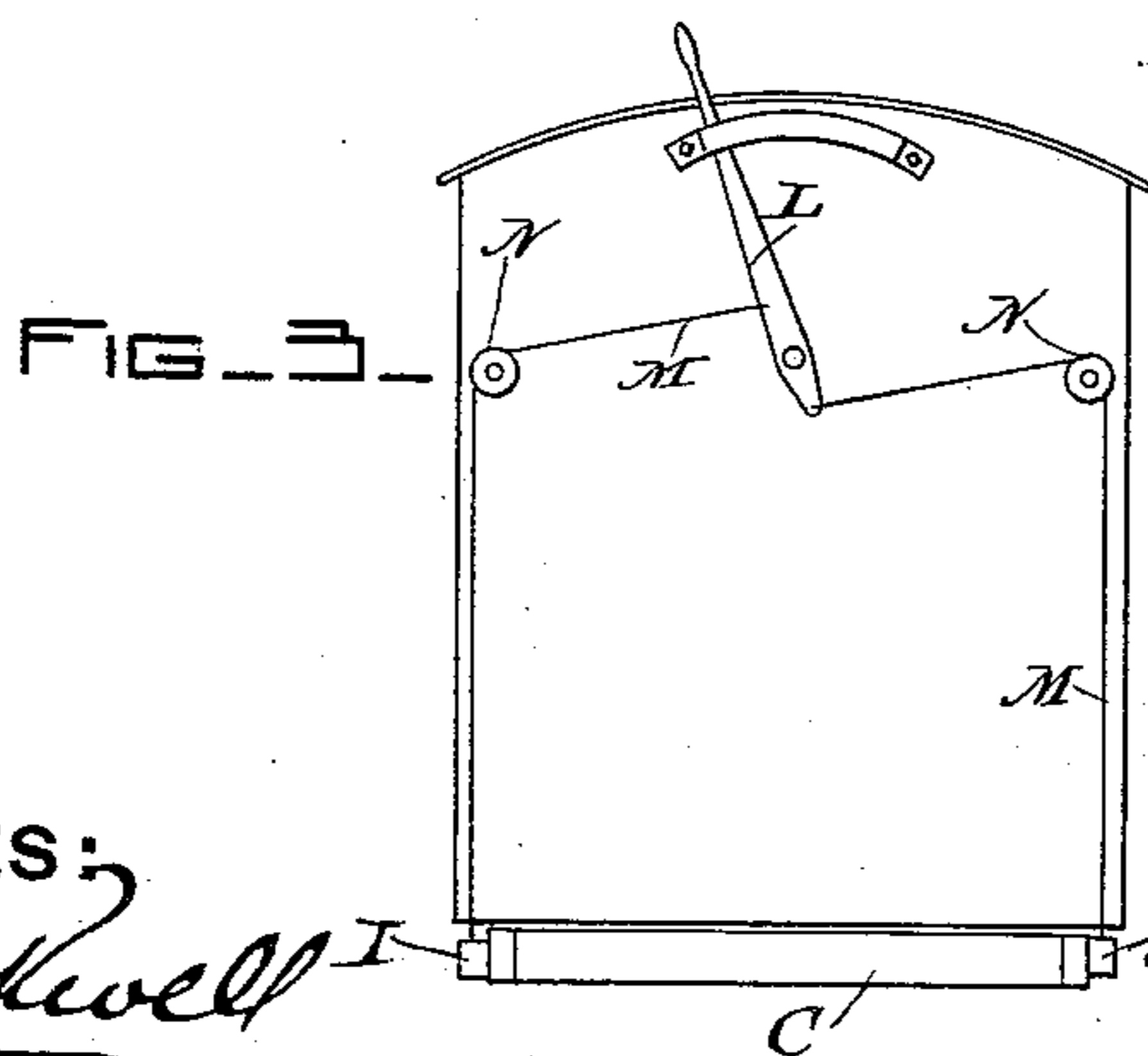
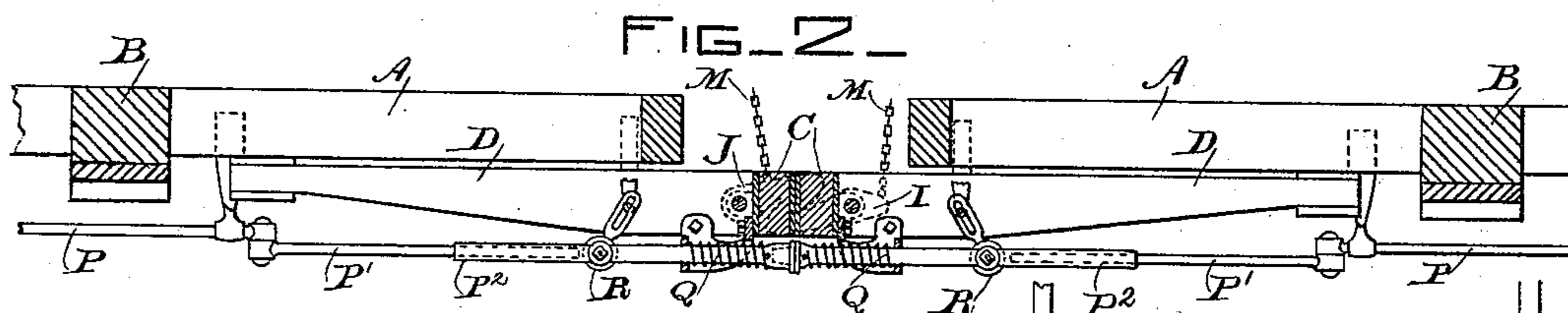
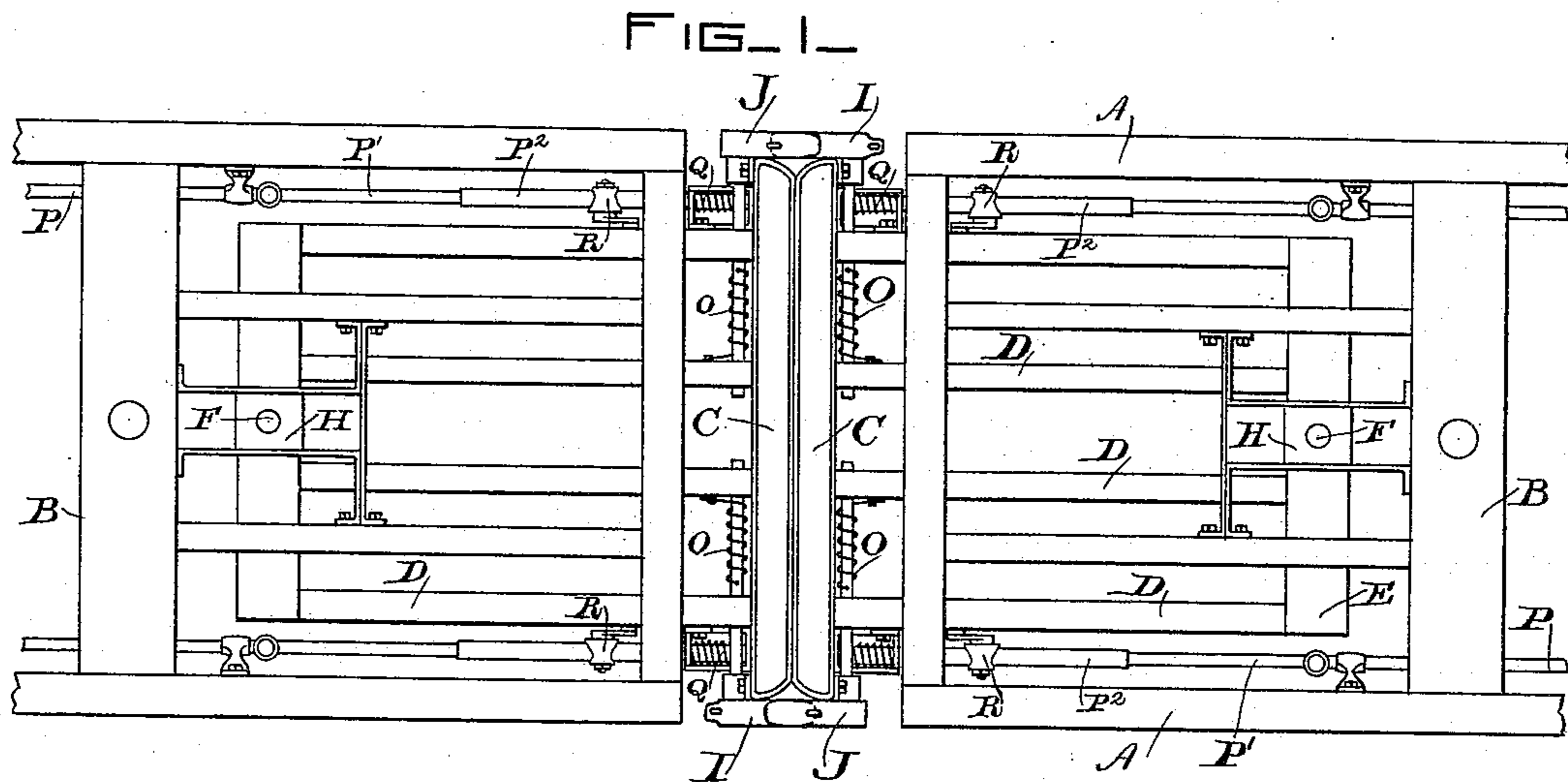
(No Model.)

2 Sheets—Sheet 1.

E. M. BENTLEY.  
RAILWAY CAR.

No. 431,715.

Patented July 8, 1890.



WITNESSES:

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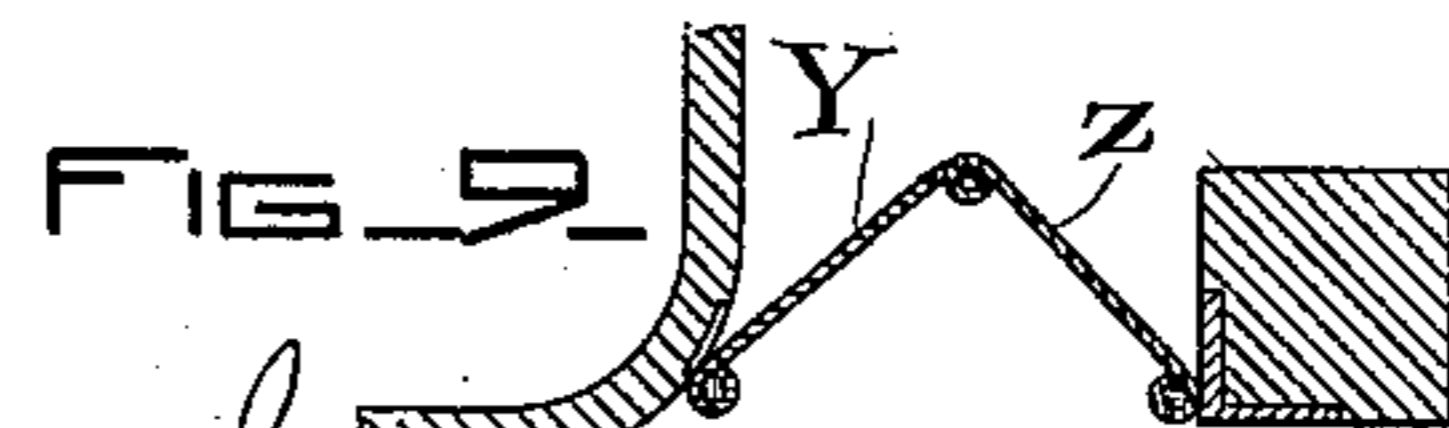
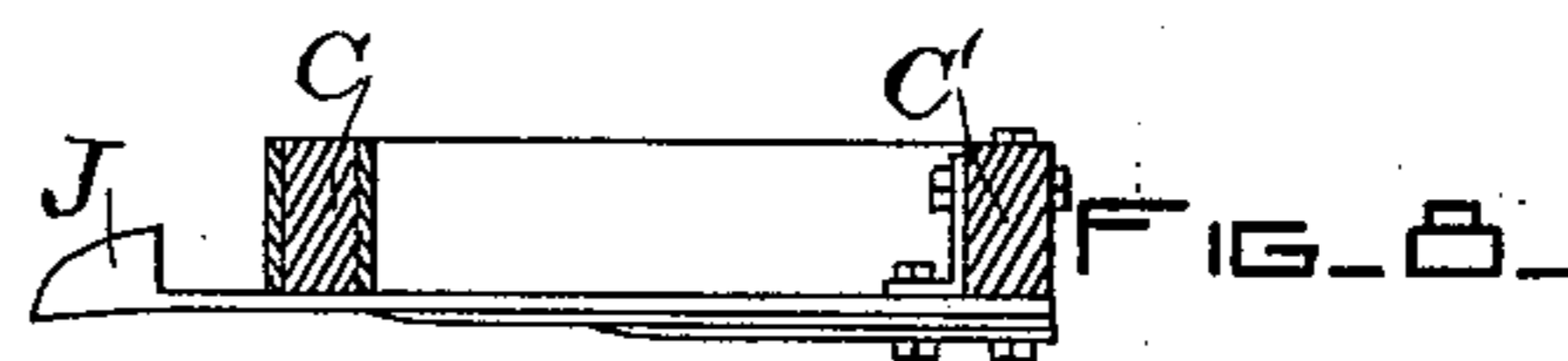
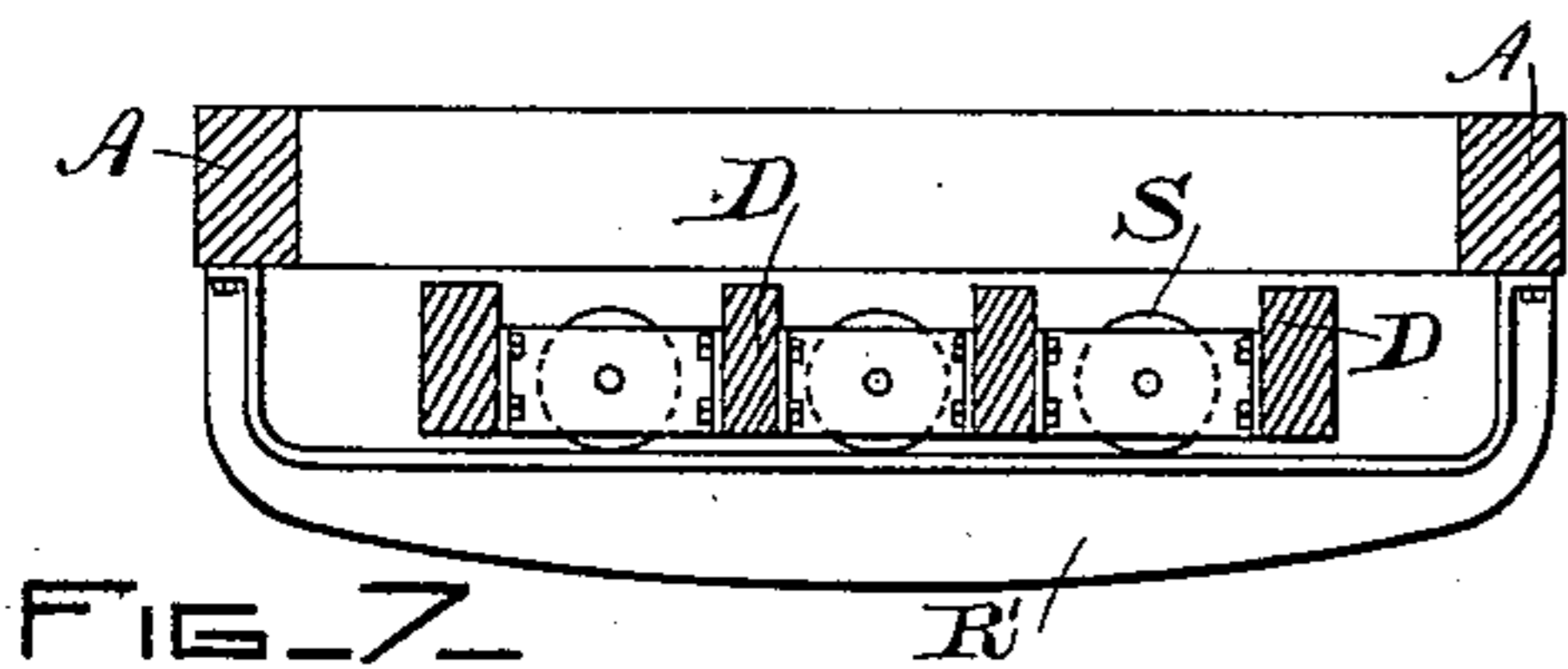
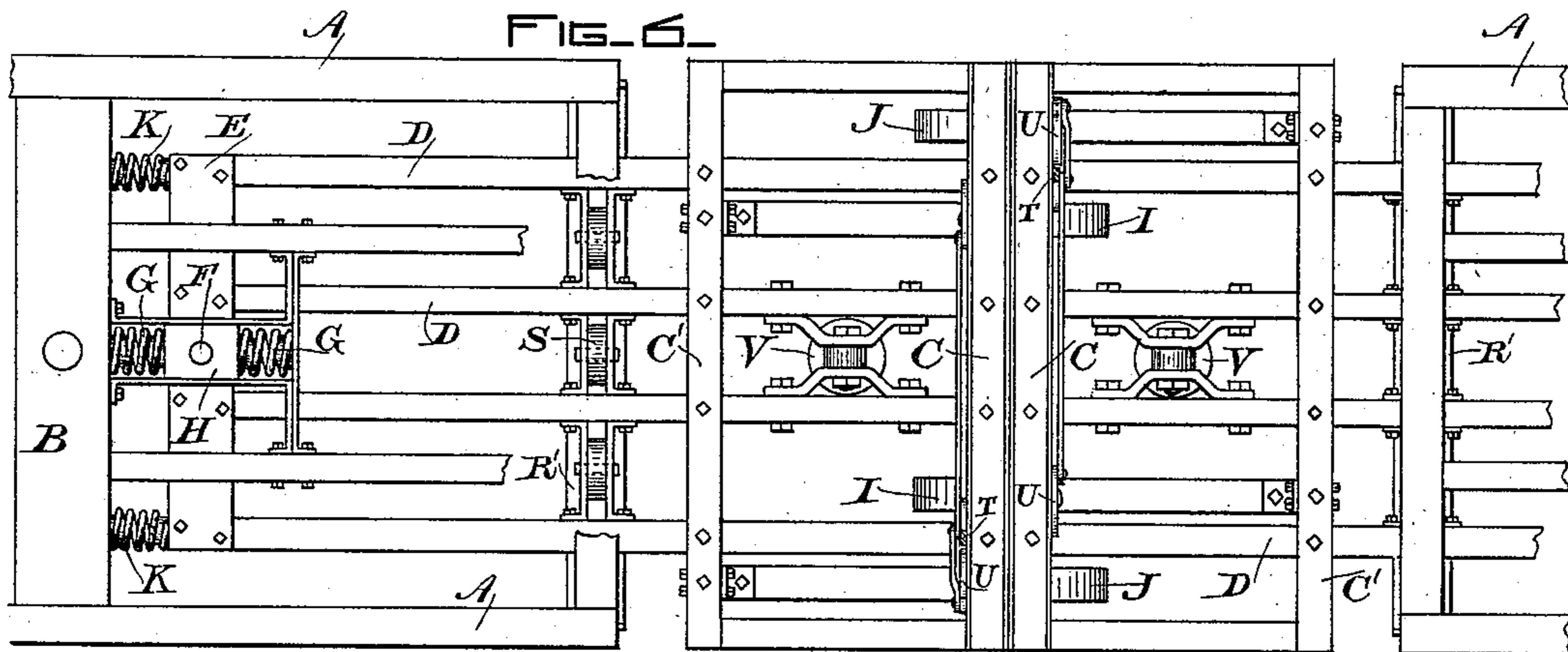
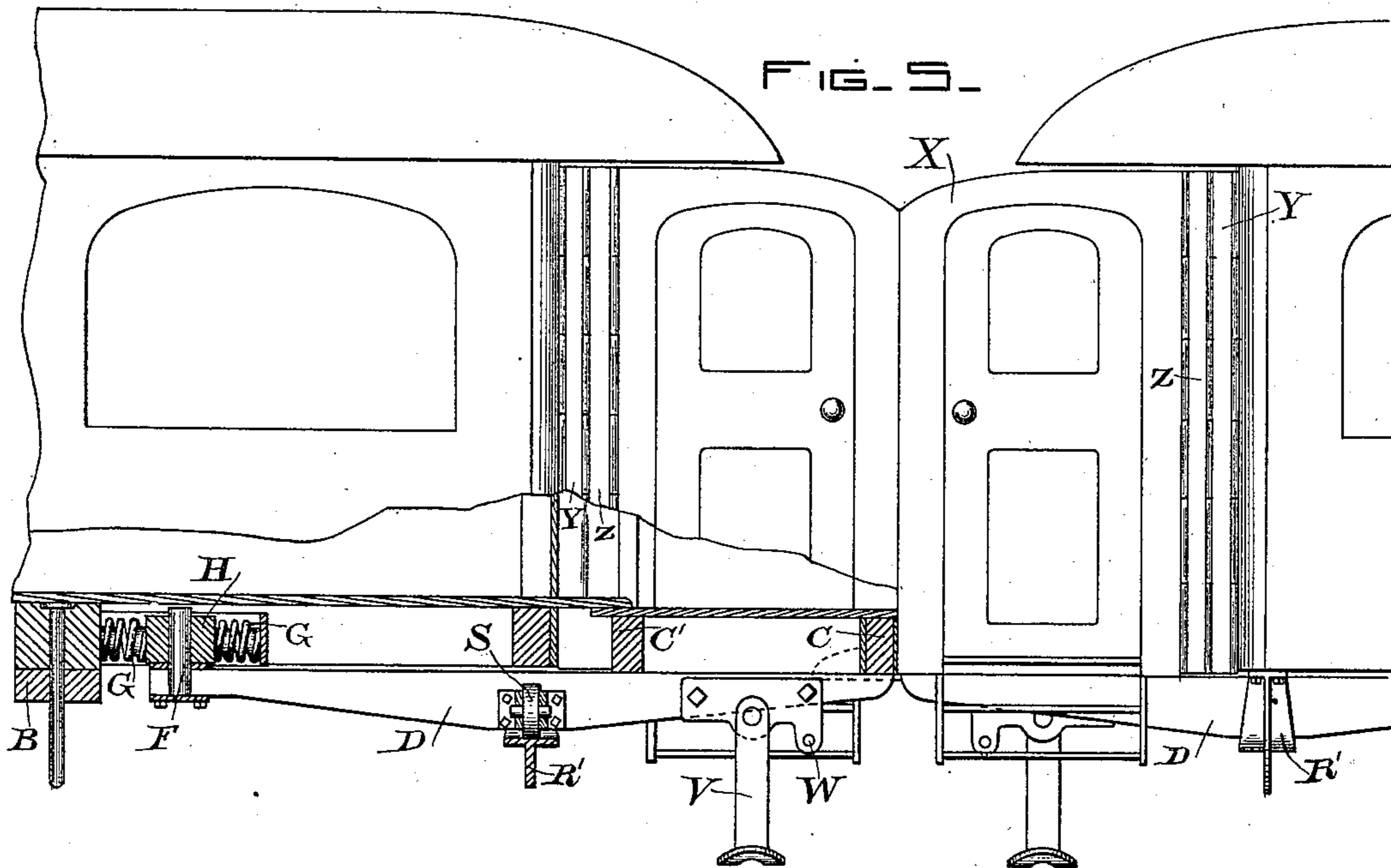
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2 Sheets—Sheet 2.

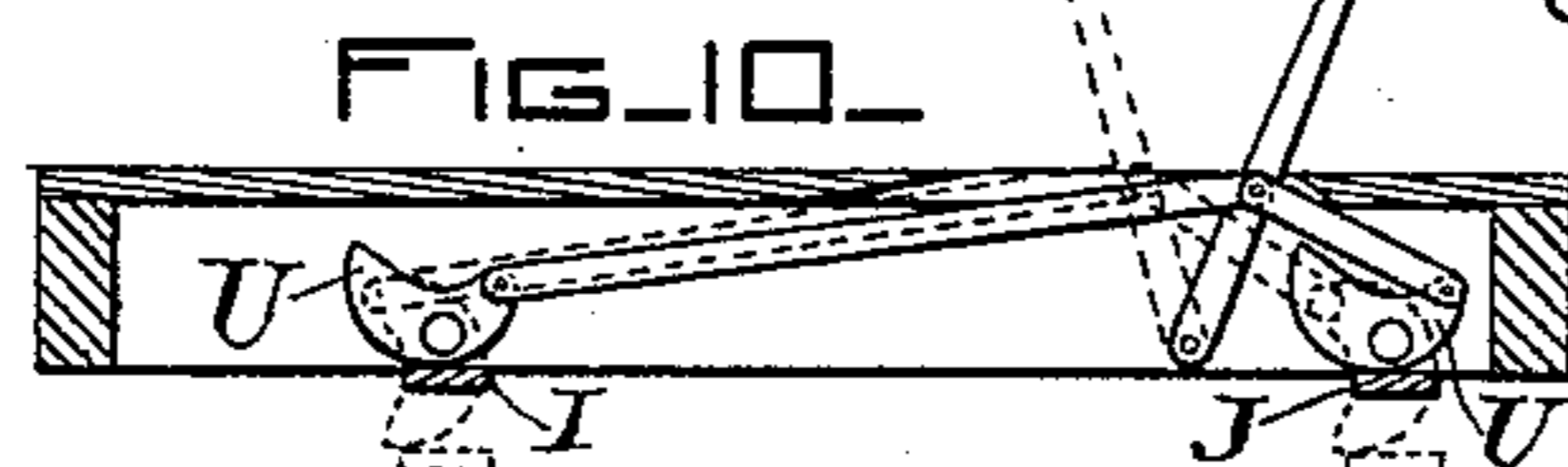
E. M. BENTLEY.  
RAILWAY CAR.

No. 431,715.

Patented July 8, 1890.



WITNESSES:  
*F. O. Shackelford*  
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# UNITED STATES PATENT OFFICE.

EDWARD M. BENTLEY, OF BOSTON, MASSACHUSETTS.

## RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 431,715, dated July 8, 1890.

Application filed March 17, 1890. Serial No. 344,079. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD M. BENTLEY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Railway-Cars, of which the following is a specification.

My invention consists in a railway-car provided with a laterally-movable end section having such transverse dimensions that it may be firmly connected to a similar section on an adjacent car, whereby the two end sections may form a unitary portion of the train, which is movable as a whole relatively to the remaining part of the two cars.

My invention may take the form of a coupling-bar extending transversely at the end of the car and pivoted thereto so as to have freedom of lateral movement relatively to the main part of the vehicle. It is provided with means for coupling it securely to a similar bar on an adjacent car. This bar may also be extended to form a platform for the vehicle, and the platform may be inclosed, so as to form a construction similar to what is known as a "vestibule-car," the inclosure having a flexible connection with the side of the car, so that the freedom of movement relative thereto may not be impaired.

My invention also consists in details of construction, among which is an arrangement by which the flexible rubber tube now employed to form a connection between the air and steam pipes on two adjacent cars may be dispensed with and in place thereof an automatic connection between rigid metallic pipes be substituted. By means of this latter feature it is possible to provide freight-cars with air-pipes, while avoiding the previous difficulties therein, since the cars will automatically couple, and at the same time close the connection between the pipes of the adjacent cars.

My invention is shown in the accompanying drawings, in which—

Figure 1 represents a plan of my invention as applied to freight-cars where a plain transverse bar is used. Fig. 2 is a longitudinal section of Fig. 1. Figs. 3 and 4 are details. Fig. 5 is a side elevation, and Fig. 6 is a plan, of my invention where the movable section is a platform inclosed to form a vestibule. Figs.

7, 8, 9, and 10 are details of the construction in Figs. 5 and 6.

Referring to Fig. 1, A represents the framing formed by the sills of the car. B is the transverse beam upon which the spring-truck swivels. C is a transverse bar extending a short distance in front of the car and forming the forward beam of a similar framing beneath the end of the car. This framing is made up of the longitudinal beams D and transverse metal plates E, which form the end opposite to the bar C. This framing is attached to the vehicle by the king-bolt F, (shown more clearly in Figs. 5 and 6,) which enters a spring-bearing just in advance of the beam B. In Fig. 6 it will be seen that this frame has buffer-springs G upon opposite sides of the block H, containing the bolt F, and is also provided with springs K K, which tend to hold it in a normal position central to the car. These springs are not shown in Fig. 1; but it will be understood that the construction is the same as that shown in Fig. 6. It will be evident that in the construction shown in Fig. 1 whenever two cars come together the bars C on the respective cars will meet each other and will adjust themselves so that they rest in contact throughout their whole length.

I provide upon each bar C an automatic hook-coupling, so that when the bars meet they will automatically become latched together by means of the hooks. I place a set of couplings at each end of the bar C. Each car has an upper and lower hook, the former being marked J and the latter being marked I, and they will be arranged correspondingly upon their car. These couplings are preferably placed at the end of the bar, so that there will never be any occasion for a brakeman to go between two cars to manipulate them.

Any suitable mechanical arrangement for operating the coupler either from the top or side of the car will be provided. In Fig. 3 I have shown a simple method by which the brakeman may remain on the top of the car and operate the coupling to free it from the adjacent one. This consists of a lever L, having two ropes or chains M, leading from opposite sides of its pivot over pulleys N and down to the coupling-hooks I and J. The

ends of chains M are attached directly to the hooks upon opposite sides of their pivotal points, respectively, so that a single movement of lever L throws one hook down and the other one up, so as to release them from the corresponding hooks on the adjacent car. The hooks are each provided with a spring O, tending to hold them in a closed position, so as to engage the hooks of the next car. It will be readily seen that when the bars C are held in their normal central position by means of springs K any car coming against another will be automatically coupled thereto by means of latches I and J, above described, and that the two bars C will be held firmly together, so that the line of connection between the cars will be substantially coincident with the length of the bars, and with their attached frames they will form a unitary part, which will be free to move laterally as a whole with respect to the remaining parts of the two cars when passing a curve. The ends of bars C are beveled and the ends of the coupling-hooks may also be beveled, so that there will never be a failure of engagement.

Instead of the ordinary air and steam pipes used at present, which terminate in a flexible tube of rubber or similar material, I provide a set of rigid pipes attached to the bars C, but jointed so as to move therewith relatively to the rest of the vehicle, and provided at their outer extremities with automatic joints, whereby the pipes of any two cars will be coupled automatically, the same as the hooks I and J. This coupling is more distinctly shown in Figs. 1 and 2.

Referring to Fig. 2, P represents the steam or air pipe on the vehicle. It is provided with an end section P', jointed to P, and terminating in a telescoping section P<sup>2</sup>. The section P<sup>2</sup> terminates in a tapered tip adapted to enter a corresponding socket on the pipe of the adjacent car. It is also provided with a spring Q, tending to hold it in an extended position and be pressed back by contact with the pipe of the adjacent car. If desired, this longitudinal movement of P<sup>2</sup> may be used to open and close a cock R, so that the pipe may be automatically closed at its end so long as the car remains uncoupled. By this arrangement air and steam pipes will be automatically connected, and the present special manipulation, together with the objectionable features in flexible sections of pipe, may be avoided.

In Figs. 5 and 6 I have shown how the end bar C may be developed into a platform for a passenger-car, and the platform can, if desired, be inclosed to form a vestibule. In this construction the stringers D are much longer and carry two cross-beams C and C', upon which the floor of the platform may be placed and upon which the vestibule may be constructed. In order to support the extra weight upon the outer end of the stringer D, I provide a special hanger R', Fig. 7, attached

to the under side of the end sill of the car. The stringers D are upheld by this hanger R' and are free to move thereon by reason of friction-rollers S. In this construction I have shown the coupling-hooks I and J of a different form, (illustrated in Fig. 8,) they being simply a spring-latch pressed upward against the under side of the bar C. Both of these latches on either car may be operated by a single handle T, Fig. 10, working through cams U. On the under side of each platform I pivot an ordinary coupler V, so that the device may be used with cars of the ordinary type by swinging the coupler V up into a horizontal position and placing a bolt through the hole W. This same arrangement of swinging coupler V will be used with the arrangement shown in Figs. 1 and 2, so that the bars C may be placed at the same height as the present coupling-bar, and when used with old styles of couplers the coupler-bar V will be swung up into a position directly in front of bar C and upon the same horizontal plane.

When a vestibule X is built upon the swinging platform, the sides thereof will be connected to the sides of the car by a flexible connection, (shown in Fig. 9,) which consists of two plates Y and Z, connected by the ordinary hinge-joint, which permits of the slight lateral movement when the train is on a curve. It will be observed that the angular displacement of the two cars will be but part of what it is at present where the platforms are formed rigidly with the vehicle, because the angle between the two cars is divided into two angles between the platforms taken together and each of the respective cars.

When a vestibule is employed, I provide for a firm connection between the upper part of each vestibule and its car by means of the arrangement shown in Fig. 4. In this figure, A<sup>2</sup> is a transverse beam of the car-roof, and A<sup>3</sup> A<sup>3</sup> are two long and heavy coiled springs reaching from A<sup>2</sup> and attached to a transverse beam A<sup>4</sup> on the vestibule. These springs form a firm connection between the upper end of the vestibule and the car, and at the same time allow of the slight movement which takes place between them.

An additional coupling may be provided for the upper part of the vestibule, if desired. It is also evident that the described pipe-connection can be used for an electrical connection as well, and the pipe may be a conductor of electricity, of steam, gas, compressed air, or any other fluid, and instead of the telescoping movement any other jointed connection giving the required freedom of adjustment may be employed.

It will be plain that many mechanical changes may be introduced into a construction of the kind described without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a railway-car, of a movable transverse end section supported

therefrom and means for connecting the same along its length to a corresponding section of an adjacent car.

2. The combination, with a railway-car, of a laterally-moving platform or coupling-bar supported therefrom and extending transversely thereto, a spring for holding it normally in a central position, and means for connecting it along its length to the corresponding device on an adjoining car.

3. The combination, with a railway-car, of a vestibule supported on the car-body by bearings permitting lateral movement thereof relatively to the car and connected with a swinging coupler so as to move therewith.

4. The combination, with a railway-car, of a swinging coupler, means for connecting it to a corresponding device attached to a car, whereby the tension of the train is transmitted through it, and a platform or vestibule connected to the said bar so as to move therewith and supported on the end of the car by bearings permitting a lateral movement.

5. The combination, with a railway-car, of a laterally-swinging vestibule on the outside of the car attached thereto by a support at the bottom permitting lateral movement and by a firm connection at the top permitting a corresponding movement.

6. The combination, with a railway-car, of a vestibule or platform on a level with the car-floor adapted to meet a similar adjacent device and connected to the car and supported therefrom by a pivoting and upholding attachment extending beneath the car.

7. The combination, with a railway-car, of a laterally-movable platform or coupling-bar extending transversely to the car and provided with a coupling device at each side of the car.

8. The combination, with a railway-car, of a vestibule or platform on a level with the car-floor adapted to yield longitudinally, so as to meet a similar adjacent device, and connected to the car and supported therefrom by a pivoting and upholding attachment extending beneath the car, so as to permit lateral and longitudinal movement relative to the car.

9. The combination, with a railway-car, of a laterally-movable platform or coupling-bar extending transversely, two sets of latches for connecting the same to a corresponding device on the adjoining car, and common operating means for the two latches.

10. The combination, with a railway-car, of a transversely-moving end section and one or more conductors on the car for air, steam or electricity, and a movable end section on said conductor attached to the corresponding end section of the car.

11. The combination, with a railway-car, of a movable end section and a pipe or conductor attached to the said section and movable therewith and provided with an automatic coupling adapted to engage with a corresponding conductor on an adjacent car.

12. The combination, with a railway-car, of a transversely-movable end section and a pipe or conductor attached thereto and movable therewith and provided with a telescoping end adapted to engage with a similar end on the pipe of the adjacent car.

13. The combination, with a railway-vehicle having a laterally-movable end section supported therefrom and having a spring movement relative thereto, of a pipe or conductor having a correspondingly-moving end section adapted to engage with a similar section of an adjacent car and a cut-off operated by the longitudinal movement of the said section.

14. The combination, with a railway-vehicle having a laterally-movable end section, of two pipes or conductors placed side by side thereon, each having a spring-actuated end section movable longitudinally and adapted to engage with a similar pipe or conductor on an adjacent car.

15. The combination, with a railway-car, of a laterally-movable end section, a pipe or conductor movable with said section and provided with a longitudinally-moving end section providing an actuating-spring, and a coupling for automatically connecting it to a corresponding pipe or conductor on an adjacent car.

16. The combination, with a railway-car, of a transversely-moving end section, couplers therefor at opposite ends, and a common operating-lever for the said couplers moving transversely to the car.

17. The combination, with a railway-car, of a transversely-moving end section adapted to be coupled to a corresponding section on an adjacent car and a removable coupling-bar for use with cars not provided with a similar section.

18. The combination, with a railway-car, of a transversely-movable end section adapted to be coupled to a corresponding section on an adjacent car and a pivoted coupling-bar removable from the line of said section.

19. The combination, with a railway-car, of a transversely-moving platform and friction-rollers between the said platform and the car to facilitate their relative movement.

20. The combination, with a railway-car, of a movable inclosed platform and springs connecting the upper part of the inclosing structure with the car.

21. The combination, with a railway-car, of a transversely-moving end section and buffer-springs permitting longitudinal play in said section, said section having also a spring movement in a lateral direction.

22. The combination, with a railway-car, of a movable end section and one or more connecting-springs A<sup>3</sup>.

23. The combination, with a railway-car, of a movable end section, intermediate springs, and a pipe or conductor on the car having an end section attached to the said movable car-section and partaking of its movements.

24. The combination, with a railway-car, of

a movable bar C, movable relatively to the car through intermediate springs, and automatic coupling-hooks for attaching the said bar to a corresponding bar on an adjacent car.

5 25. The combination, with a railway-car, of a movable transverse end bar C and automatic coupling-hooks at each end of the said bar.

10 26. The combination, with a railway-car, of a movable end section consisting of a framing placed beneath the main frame of the car and connected therewith through springs permitting a longitudinal and transverse movement.

15 27. The combination, with a railway-car, of a transversely-movable platform having

stringers extending under the end of the main car-frame and attached thereto through intermediate springs at a point in front of the main truck-beam of the car. 20

28. The combination, with a railway-car, of a transversely-moving end platform and intermediate springs, the said platform having longitudinal stringers extending under the main frame of the car, and a transverse connecting-piece for said stringers carrying a pivot-bolt, by which the platform is connected to the vehicle. 25

EDWARD M. BENTLEY.

Witnesses:

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N. L. HAYES.