

(No Model.)

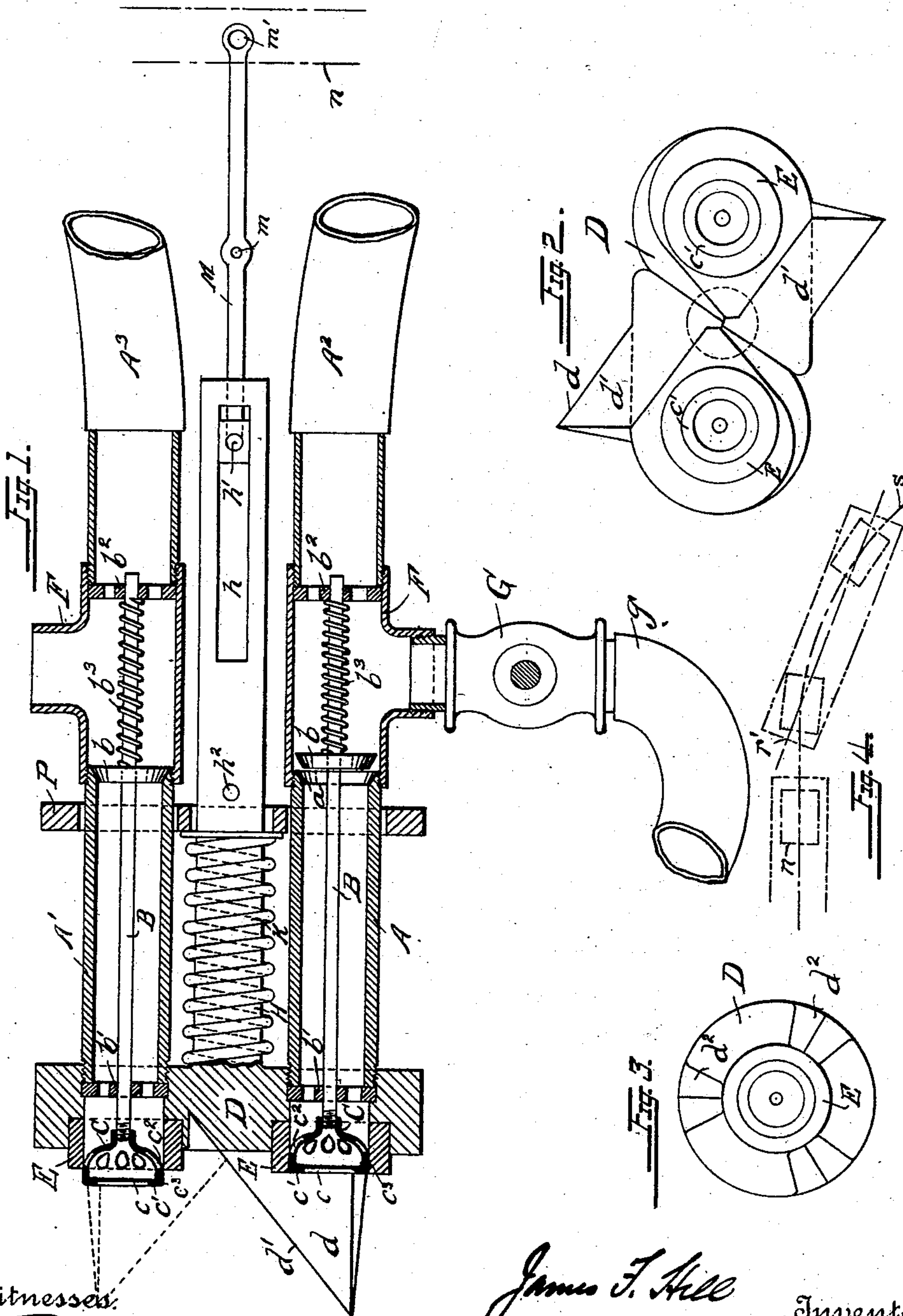
2 Sheets—Sheet 1.

J. F. HILL.

AIR AND STEAM COUPLING FOR RAILWAY CARS.

No. 472,807.

Patented Apr. 12, 1892.



Witnesses:

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(No Model.)

2 Sheets—Sheet 2.

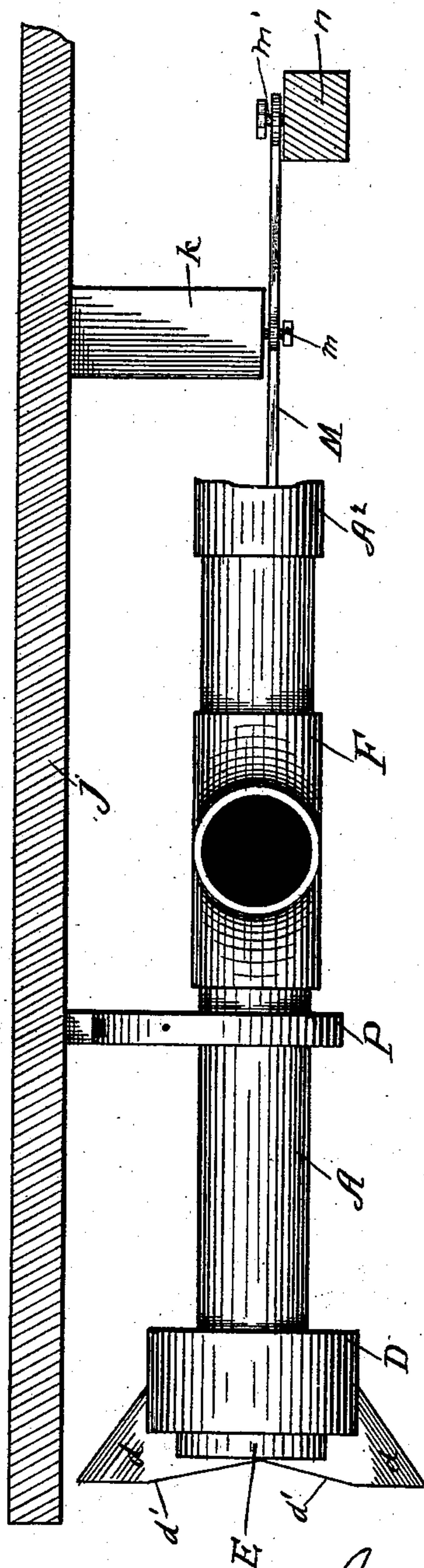
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Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES F. HILL, OF FLEETWOOD, PENNSYLVANIA.

AIR AND STEAM COUPLING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 472,807, dated April 12, 1892.

Application filed June 4, 1891. Serial No. 395,051. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. HILL, a citizen of the United States, residing at Fleetwood, in the county of Berks, State of Pennsylvania, have invented certain Improvements in Air and Steam Couplings for Railway-Cars, of which the following is a specification.

This invention relates to mechanism intended particularly for making air or steam pipe connections between the different cars of a railway-train, either for operating the brake or warming the cars, or both.

My main object is to provide an improved mechanism whereby the pipe or hose coupling will be made or broken automatically by the mere act of coupling or uncoupling the cars without requiring any attendant, as heretofore.

The invention is fully described in connection with the accompanying drawings, and is specifically pointed out in the claims.

Figure 1 is a sectional plan view of my coupling mechanism, the points of connection with the car being indicated as hereinafter described. Fig. 2 is a front view of the double coupling-head. Fig. 3 is a similar view of a modified coupling-head to be used with a single pipe. Fig. 4 is a diagram showing the position assumed by the truck-frame with relation to the car-body when on a curve; and Fig. 5 is a side elevation of my device with the parts G and g removed, and showing the manner of securing the same to the car-frame.

A and A' represent short sections of pipe, which are flexibly connected with main pipes extending under the body of the car by means of lengths of hose A² and A³, or in any suitable manner, and are intended to conduct compressed air and steam, respectively. An intermediate T F provides a side outlet from each, which may be connected with a section of hose g, by means of which connection may be made in the ordinary way with an adjoining car not provided with my improved coupling, this side outlet being controlled, as usual, by a stop-cock G. The pipes A and A' are connected at their forward ends to a head-piece D, into which they are screwed, and an interior valve-seat a is formed at the rear end of each pipe, in which is seated a valve b, secured to a stem B, which passes through

perforated guide-plates b' and b'. These valves are normally held in their seats by the spiral springs b³, and when so held cut off all flow through the head D; without, however, preventing the flow through the hose g, which is controlled independently of the stop-cock G. To the forward end of each stem B is secured an enlarged hollow end piece C, the cylindrical portion of which c³ fits movably in the rubber joint-piece E, secured to the head D. Openings c² and c permit the passage of air or steam through the hollow end piece into the coupling of an opposite car when connected, as will be hereinafter described.

Extending rearwardly from the head-piece D, between the pipes A and A', is a shaft H, which, together with the pipes, passes loosely through a supporting-hanger P, fastened to the bottom of the car-body j. The rear end of this shaft is pivotally connected at h' to the end of a lever M, which latter is pivoted intermediately to the car-body or to a block k, depending therefrom at a point m and loosely connected at its opposite end m' to the cross-timber of the truck-frame of the car. A spring K, strung on the shaft H and seated against the hangers P, presses the whole coupling forward, this movement being limited by the pin h², and the slot h in the shaft, in which the pivotal connection h' with the lever M slides, permits the whole coupling to be moved inward by compressing the spring K.

The natural position of my pipe-coupling mechanism is in the center of the car transversely and under the car-coupling mechanism. Presuming two passenger cars provided with my improved mechanism to be approaching each other on a straight track, the automatic operation of coupling will be as follows: As the automatic car-couplers approach their point of engagement the heads D of my pipe-coupling come in contact, first touching each other on the projecting guides or wings d, which, starting from the head D, midway between the joints E, extend angularly forward, as shown, so as to present inclined surfaces d', which when brought in contact and pressed together naturally center the approaching couplings, so that the faces c' of the valve-stem ends which project beyond the joints E, as shown in the upper portion of

Fig. 1, are guided into direct contact and are pressed inward, thus opening the valves *b* and bringing the opposite rubber rings *E*, which inclose the valve-stem ends, together, so as to form joints and prevent the escape of air or steam, while at the same time permitting the free flow from one car to another. By the time the car-couplers are coupled together the whole pipe-coupling will be moved inward some distance, compressing the spring *K*, the resilience of which will take up the movement of the draw-springs and maintain proper pressure on the joints *E* at all times. If the cars be brought together with either one or both of them on a curve, as indicated in Fig. 4, it is evident that the end of the car on the curved track will be thrown out of center with the center line *s* between the rails, as indicated, to an exaggerated extent at *r'*. In order to bring the pipe-coupling mechanism into position to fairly meet that on the opposite car, it is necessary to turn it toward the center of the track-curve, and this is accomplished in my construction by the connection *m'* with the truck-frame, which latter will stand out of line with the longitudinal center line of the curve, as indicated in Fig. 4. The head *D* will be moved in the same direction from this center line as is the frame *n* by means of the connecting-lever *M*, which swings the coupling mechanism laterally in the hanger *P*, the openings through which are of sufficiently greater diameter than the parts passing through them to permit such lateral movement thereof, the proportionate lengths and location of parts being such as to move the head *D* sufficiently to bring it practically to the center line *s* of the rails, and thus secure its automatic coupling with the mechanism on the approaching car or maintain a proper connection on cars already coupled when rounding curves.

Where but one line of piping is to be connected, a single head *D*, as indicated in Fig. 4, may be used, the joint *E* being in the center of the head, and three guide-wings *d'* being provided to properly center the meeting couplings. Whether a single or double coupling is used, it is evident that the construction may be considerably varied without departing from the spirit of my invention. For instance, the means of suspending the mechanism to the body of the car so as to secure the desired lateral movement of the coupling-head on curves may be very different in detail from the means shown; or the contact ends of the valve-stems may be differently made from the preferred construction shown. I do not therefore limit myself to the exact mechanism set forth; but

What I claim is—

1. The combination, with a car, of a pipe or hose coupling mechanism, substantially as described, pivotally secured intermediately of its length to the car-body and having its coupling-head extended to a point adjacent to the

car-coupling and its opposite end connected with the car-truck, whereby the coupling-head is swung laterally on curves, substantially as and for the purpose set forth.

2. In a pipe or hose coupling mechanism for cars, the combination, with the head-piece having guide-wings at its forward end, elastic rings adjacent to said wings, the pipe entering said head and having guide-plates at its opposite ends, each of said guide-plates having a series of perforations, of a puppet-valve seated within said pipe, a stem projecting through said valve and guide-plates, a hollow perforated head on the forward end of said stem, adapted to make a tight joint with said elastic rings to prevent the passage of air or steam between them, and a spring encircling said stem between said valve and the rear guide-plate, substantially as shown and described.

3. In a double pipe or hose coupling for cars, the combination of the pipes *A* and *A'*, secured to a common head-piece, puppet-valves seated within said pipes and having operating-stems projecting through the head-piece, joints *E* in the head-piece inclosing the end of the valve-stems, guiding-pieces on the end piece between the joints, and a spring between said pipes for taking up the movement of the draw-springs and maintaining proper pressure on the joints *E* at all times, substantially as described.

4. In a double pipe or hose coupling for cars, the combination of the laterally-movable pipes *A* and *A'*, secured to a common head-piece and a shaft extending rearward from the head-piece, a spring encircling said shaft, and a lever connected with said shaft, pivotally supported at its center from the car-body and pivoted at its rear end to the car-truck.

5. The combination, with a car, of a double pipe or hose coupling mechanism consisting of pipes *A* and *A'*, secured to a common head-piece *D*, puppet-valves seated within said pipes and having operating-stems projecting through the head-piece, and a shaft extending rearward from the head-piece between the pipes, said shaft being pivotally supported from the car-body, provided with a spring *K* and having its inner end operatively connected by a lever *M* with the car-truck, all arranged and adapted to operate substantially as and for the purpose set forth.

6. In a pipe or hose coupling for cars, the combination, with the head-piece and laterally-movable pipe entering the same and provided with means for opening and closing the passage through it, of a shaft adjacent to said pipe, a coil-spring encircling said shaft, and a lever having a pivotal sliding connection at its forward end with said shaft, said lever being also pivoted intermediate of its length to the car-body and at its rear end to the car-truck, all substantially as described, and for the purposes specified.

7. In a pipe or hose coupling for cars, the

combination, with the head-piece, a hanger depending from the car-body, and a pipe passing loosely through an opening in said hanger, entering said head-piece at its forward end
5 and provided with a means for opening and closing the passage through it, of a shaft adjacent to the said pipe, provided with a pin h^2 for limiting the movement, a coil-spring encircling said shaft, and a lever having a
10 pivotal sliding connection at its forward end

with said shaft, said lever being also pivoted intermediate of its length to the car-body and at its rear end to a car-truck, all substantially as described, and for the purposes specified.

In testimony whereof I affix my signature in 15 presence of two witnesses.

JAMES F. HILL.

Witnesses:

JOHN H. ROTHERMEL,
WILSON J. HOCH.