

W. M. SMITH.

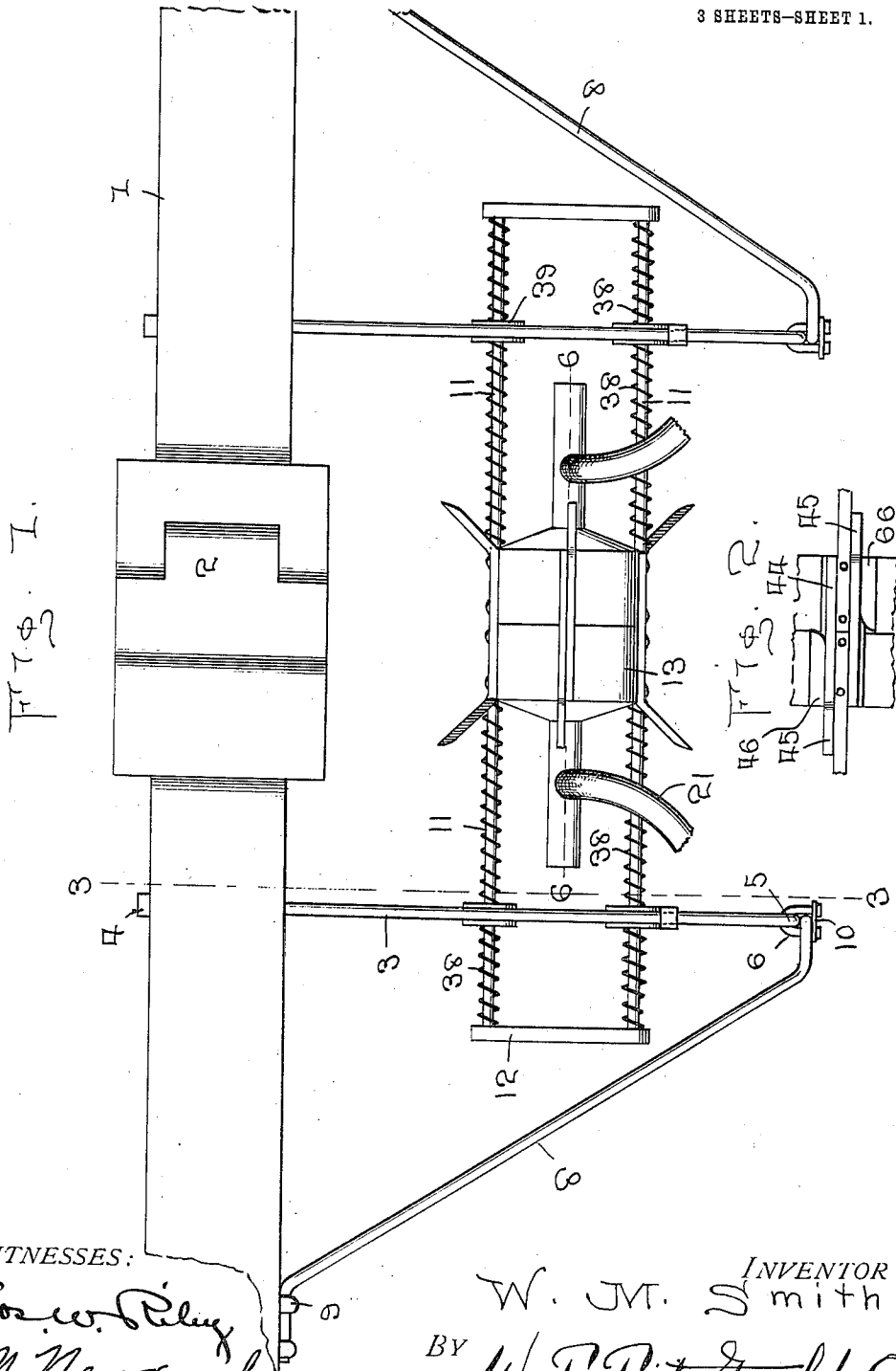
COUPLING.

APPLICATION FILED JAN. 3, 1912.

1,026,716.

Patented May 21, 1912.

3 SHEETS-SHEET 1.



WITNESSES:

Thos. W. Riley
M. Newcomb,

INVENTOR
W. M. Smith
BY
W. T. Fitzgerald & Co.
Attorneys

W. M. SMITH.

COUPLING.

APPLICATION FILED JAN. 3, 1912.

1,026,716.

Patented May 21, 1912

3 SHEETS—SHEET 2.

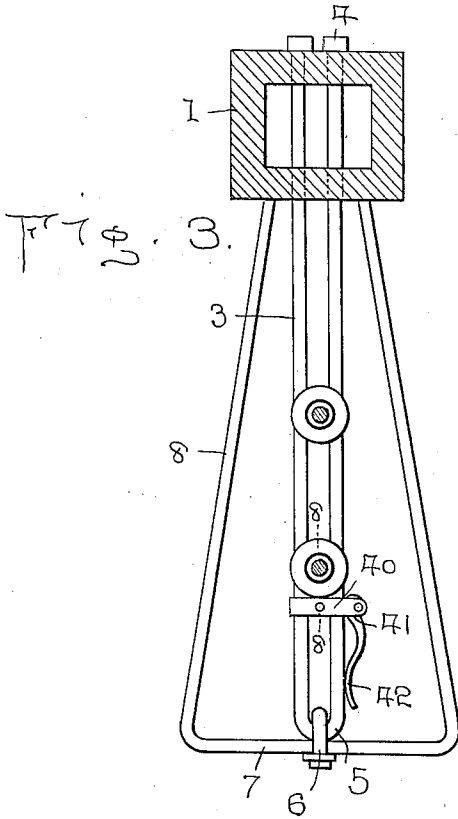


Fig. 5.

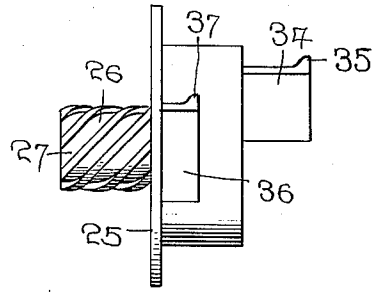
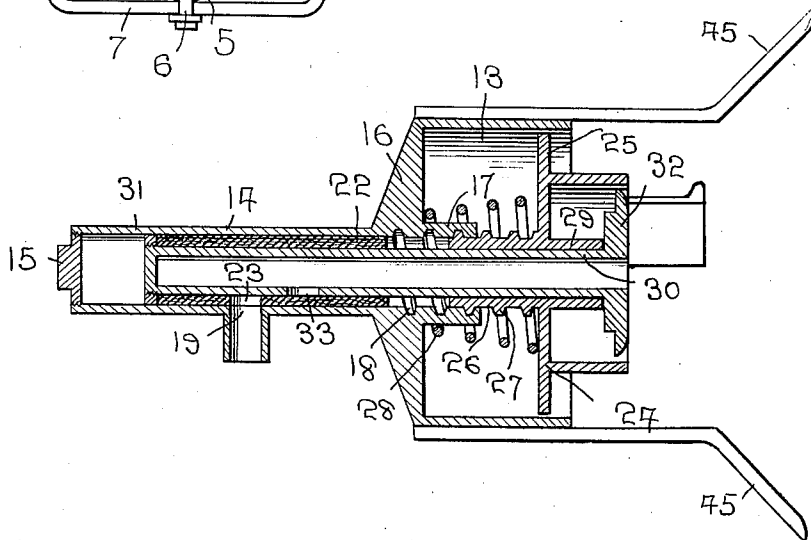


Fig. 4.



WITNESSES:

Thomas Riley
M. Newcomb

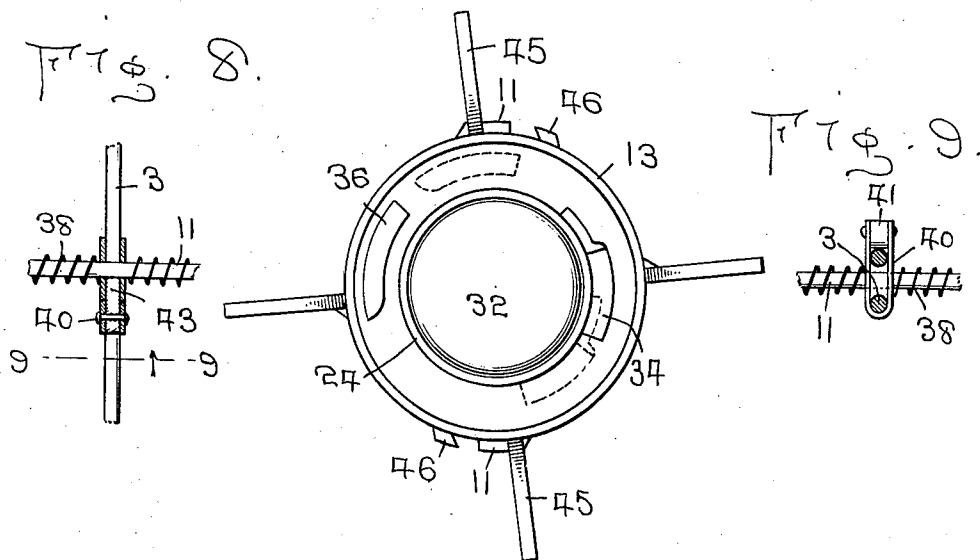
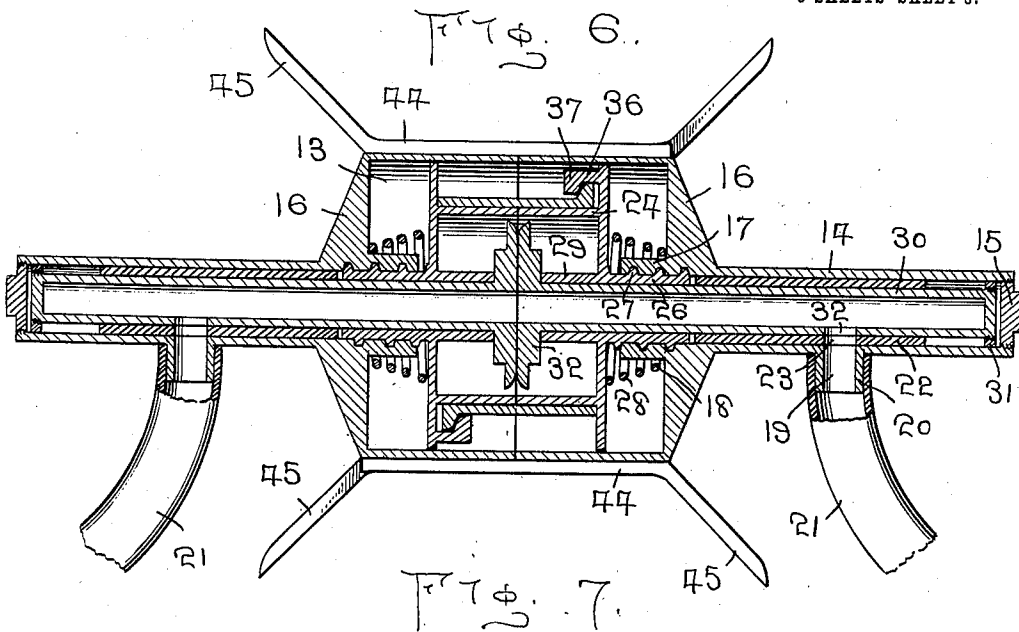
W. M. Smith
INVENTOR
BY W. J. Fitzgerald & Co.,
Attorneys

W. M. SMITH.
COUPLING.
APPLICATION FILED JAN. 3, 1912.

1,026,716.

Patented May 21, 1912.

3 SHEETS-SHEET 3.



WITNESSES:

Thos. W. Riley
M. Newcomb

W. M. Smith INVENTOR
BY W. T. Fitzgerald & Co.,
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM M. SMITH, OF BASTROP, LOUISIANA, ASSIGNOR OF ONE-THIRD TO H. FLOOD
MADISON, OF BASTROP, LOUISIANA.

COUPLING.

1,026,716.

Specification of Letters Patent.

Patented May 21, 1912.

Application filed January 3, 1912. Serial No. 669,261.

To all whom it may concern:

Be it known that I, WILLIAM M. SMITH, a citizen of the United States, residing at Bastrop, in the parish of Morehouse and State of Louisiana, have invented certain new and useful Improvements in Couplers; 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 rolling stock, and more particularly to couplers for the same.

15 An object of the invention is to provide means for automatically coupling the train line pipe between the cars.

Another object is to provide an automatic coupler for the train line pipe so that the same will be automatically connected between the cars as the latter are brought together.

Another object is to provide a train line pipe coupler which will act automatically as the cars are coupled or uncoupled.

Other objects and advantages will be hereinafter set forth and pointed out in the specification and claims.

In the accompanying drawings which are made a part of this application, Figure 1, is a side elevational view of the coupler in locked position, showing said coupler suspended below the ordinary car coupler. Fig. 2, is a fragmentary bottom plan view, showing the guide fingers and finger directing plates carried by the interlocking members of the train line coupler. Fig. 3, is a vertical sectional view on the line 3—3, Fig. 1. Fig. 4, is a horizontal longitudinal section through one of the interlocking train line pipe coupler members, showing the same in unlocked position. Fig. 5, is a detail view of the inner cup of one of the coupler members, and parts carried thereby. Fig. 6, is an enlarged sectional view on the line 6—6, Fig. 1. Fig. 7, is an end view of one of the coupler members in locked position, looking into the member and showing in dotted lines the position of the locking tongue and locking fingers when said member is in locked position. Fig. 8, is a detail fragmentary section on the line 8—8, Fig. 3. Fig. 9 is a similar view on the line 9—9 of Fig. 8, looking in the direction indicated by the arrow. Referring more particularly to the draw-

ings in which similar reference numerals designate corresponding parts throughout the several views, 1 represents the draw bars pivoted to the trucks and projecting beyond the ends thereof, carrying the car coupler members 2 upon their projecting ends for interlocking engagement with one another. The draw bars 1 may be pivotally or otherwise secured to the car trucks, as may be desired.

Depending from each draw bar 1, a short distance inwardly of the car coupler member 2 carried thereby, is a U-shaped guide 3, having its upper ends secured through the draw bar 1, with nuts 4 or other securing means, upon the upper extremity of said guide. Projecting over the lower curved portion 5 of the guide wheels is the fastening staple 6 which also passes over the horizontal portion 7 of the guide brace, the arms 8 of which are bent a short distance from the horizontal portion 7 to extend upwardly and rearwardly toward the rear or inner end of the draw bar 1. The upper extremities of the arms 8 are bent at an angle and secured to the under side of the draw bar 1, by the securing means 9, as will be clearly understood. I have shown the arms 8 as slightly converging toward their upper ends. The connecting staple 6 serves to connect the lower curved portion 5 of the U-shaped guide with the horizontal portion 7 of the brace for said guide and the parallel ends of the staple are connected by the washer plate 10 which prevents said staple from working off of the guide and bracing members and thus allowing said parts to separate.

Working between the parallel arms of each guide 3 are the parallel rods 11, the inner ends of which are connected by a vertically positioned connecting bar 12, while the outer cup 13 of one of the train line pipe coupler members is secured between the outer ends of said rods, with the open end of the cup positioned outwardly, the rods 11 being secured upon the outside of the cup.

Projecting rearwardly from each cup 13 is the valve cylinder 14 having its rear end closed by the plug 15. The cylinder 14 is continued through the thick closed end 16 of the cup 13, in the form of a sleeve 17 having internal spiral threads 18, the purpose of which will presently appear. The valve cylinder 14 is provided with the valve

opening 19 and the nipple 20 projecting at an angle to the cylinder, from around the opening 19. The nipple 20 is to accommodate the end of a flexible hose 21 from the train line pipe (not shown). The greater portion of the interior of the cylinder 14 has the rubber packing 22 secured there-against with an opening 23 opposite the opening 19. The packing 22 is secured to the interior of the cylinder 14 and prevents escape of air from the cylinder, except through the opening 19.

Working within each outer cup 13 is an inner cup 24 which is considerably smaller in diameter than the outer cup 13 and has a circumferential flange 25 projecting on a plane with the flat bottom of the cup, said flange and bottom combined having a diameter slightly smaller than the interior of the outer cup to allow free movement of the same within said outer cup. Projecting from the bottom of the inner cup 24 is the sleeve 26 which is provided with the exterior spiral threads 27 for engagement with the internal spiral threads 18 to cause the inner cup 24 to rotate as it moves within the outer cup 13. A suitable coil spring 28 is positioned within the outer cup 13 and has one end pressing against the bottom of said outer cup, while its other end is pressed against the bottom of the inner cup and resiliently holds the inner cup in its outermost or unlocked position. This spring acts as a valve closing and inner cup controlling spring as will presently appear. The inner cup 24 is also provided with a sleeve 29 within said cup, said sleeve stopping short inwardly of the edge of the cup. The sleeve 29 is practically a continuation of the sleeve 26, it being understood that the proper size opening is provided through the bottom of the cup to allow the valve tube 30 to work through the sleeves 29 and 26 and through the rubber cylinder packing 22. The valve tube 30 has its rear end closed and a nut 31 positioned thereover rearwardly of the cylinder packing 22 and adapted for engagement against the rear end thereof to limit the outer movement of the valve tube 30. The outer end of the valve tube 30 is opened and a cylindrical flat head 32 is carried by said outer end and adapted for engagement against the outer end of the sleeve 29 to limit the inward movement of the tube and to also force the inner cup 24 inwardly to its locked position during the inward movement of the valve tube 30.

The valve tube 30 is provided with an opening 33 which is adapted to register with the openings 19 and 23 when said valve tube is in its rearward position to allow air from the flexible tube 21 to enter the valve tube and travel through the corresponding valve tube 30 of the other air coupler member, when the heads 32 of both

valve tubes 30 are engaged against one another and the valve openings 33 are in register with the valve openings 19 and 23, upon the coupled cars.

Projecting outwardly from the edge of each inner cup 24 is a locking tongue 34 having its outer edge turned outwardly at a right angle, as shown at 35. The locking tongue 34 is adapted for interlocking engagement with a locking jaw 36 projecting outwardly from the flange 25 of the inner cup, with which the first cup is adapted for engagement. The locking jaw 36 also has its outer edge 37 turned at a right angle to receive therein the right angled edge 35 of the locking tongue.

Engaged around each of the rods 11 and upon opposite sides of the guides 3 are the tension springs 38 which are adapted to allow the rods to move in opposite directions and automatically return said rods to their normal positions. The springs 38 are spaced away from the guides 3 by means of the spacing washers 39 upon the rods 11 to the opposite sides of the guides. The rods 11 are also held in substantially horizontal positions by means of the tension springs 38 and are movable vertically between the parallel arms of the guides 3 for proper adjustment. The downward movement of the rods 11 between the parallel arms of the guides 3 is limited by means of the adjusting yoke 40 fitting around the guides 3 and held in adjusted position thereupon by the cam latch 41, the curved handle 42 of which is engaged against one of the parallel members of said guide when the cam is in position to hold the yoke 40 against movement. The yoke 40 carries between its parallel portions, inwardly of the parallel arms of the guide 3, a bearing block 43, upon which the lower rod 11 is adapted to bear.

Secured to the outer surface of each outer cup 13 is a plurality of fingers 44, the outer portions 45 of which are directed outwardly at an angle to the portion secured to the cup and serves to guide the outer cups 13, properly against one another, during the operation of coupling the cars.

Running parallel with the outer end of each rod 11 and secured to the outer face of the outer cups 13, a short distance from the outer ends of the rods 11, are the finger directing plates 46 which co-act with the outer ends of the rods 11 to direct the fingers 44, certain of said fingers passing between the directing plates 46 and the ends of the rods 11, as will be clearly apparent.

The operation is as follows: The cars are coupled together in the usual manner, the car coupler members 2 properly interlocking with one another. As the car coupler members 2 move toward and engage one another the cups of the train line pipe coupler

are also brought toward one another and forced together, the guide fingers 44 serving to properly guide the outer cup 13, in the proper directions, the rods 11 swinging freely between the parallel arms of the guides 3.

It will be understood that the inner cups 24 project beyond the outer cups 13 when in unlocked position. Therefore, the outer circular edges of the inner cups 24 and the heads 32 of the valve tubes 30 engage one another and the turned edges 35 of the locking tongues 34 engage against the flanges 25, before the outer cups 13 come in contact with one another. As the outer cups 13 continue to move toward one another after the engagement of the heads 32, said heads and inner cups are forced within the outer cups 13 against the tension of the valve closing and inner cup controlling springs 26, forcing the valve tubes 30 farther into the cylinders 14 and causing the inner cups 24 to rotate as they disappear in their travel into the outer cups 13. When the cups are locked together, the valve tubes 30 will be in such positions that their openings 33 will be opposite the valve openings 19 and 23 to allow the passage of fluid such as air, steam, etc., through the train line pipe sections carried by the different cars.

The locking tongues 34 and jaws 36 will serve to properly lock and hold the cups in coupled position (as shown in Figs. 1 and 6), against the tension of the springs 28, while the car coupler members 2 are in interlocking engagement with one another. The tension springs 38 will resiliently hold the parallel rods 11 in proper position and equalize the strain upon the opposite sides of the guides 3, within which the rods 11 are mounted for movement.

Owing to the fact that the rods 11 are vertically adjustable within the guides 3, it will be evident that cars of various sizes and having their trucks of different distances above the roadbed, may have their train line pipes readily coupled together, when equipped with this form of coupler.

Should the cars be uncoupled for any reason, the cups 13 and 24 will be drawn from one another by means of the tension springs 38, without the liability of breaking the parts and the inner cups 24 will be forced to their outermost position by means of the valve closing and inner cup controlling springs 28, said springs 28, also serving to close the valves by forcing the valve tubes 30 outwardly with the inner cups 24.

Owing to the construction and coöperation of the various parts, it will be evident that this train line pipe coupler will be highly efficient in use and that the cars upon which the members of the coupler are carried, may readily turn independently of one another or may descend or ascend a steep

grade without in the least interfering with the operation or efficiency of the coupler or causing the parts thereof to separate. It will also be apparent that this train line pipe coupler may be easily installed upon the rolling stock now in use at a very reasonable cost.

What I claim is;

1. The combination with a draw bar; of a supporting guide, a brace for said guide, cup carrying means working on said guide, an outer cup carried by said cup carrying means, an inner cup within the outer cup, a stationary cylinder carried by said outer cup, a movable valve tube carried by said inner cup and adapted for movement within the cylinder, and means for adjusting the cup carrying means within the guide.

2. A device of the class described comprising guides, means for bracing the guides, cup carrying rods engaged through said guides, outer cups carried by said rods, inner cups within the outer cups, cylinders carried by said outer cups, valve tubes carried by said inner cups, said cups being adapted for engagement with one another, means for guiding said outer cups, and means for rotating the inner cups as they engage one another to lock said inner cups in engaged position, said inner cups being adapted to force the valve tubes carried thereby into the cylinders during the interlocking engagement of said inner cups, and tension springs to either side of the guides to relieve the cups of strain.

3. A device of the class described comprising an inner cup and an outer cup, means for supporting said cups beneath a car truck, a second inner cup and outer cup and means for supporting said cups beneath a car truck, said cups carried by each car being adapted for engagement with the cups carried by the other car, a cylinder carried by each outer cup, means for connecting said cylinders with the train line pipe of the car beneath the truck of which said cylinder is supported and valve rods controlled by the inner cups for obtaining communication between the train line pipe of the two cars when the cups of said cars are engaged with one another.

4. A train line pipe coupler comprising a rigid cup and a movable cup within said rigid cup, connecting rods for carrying said cups, said rigid cup being secured between said rods, a guide for said rods, means for holding said rods in adjusted position within said guide, said rods being adapted for reciprocating movement through said guide, means for resiliently controlling said movement, said inner cup being adapted to be forced inwardly, means for compelling said cup to rotate during its movement inwardly, means for returning said cup to its outer position, and a valve rod adapted to be

moved with said inner cup to register with a valve opening when said inner cup is in its innermost position.

5 The combination, with a car coupler draw bar; of a guide depending therefrom, means connected with the guide and the draw bar for bracing said guide, cup carrying bars positioned through said guide, means for resiliently retaining said bars in
10 position through said guides, a cup carried between the outer end of said bars, a movable cup within the first cup, a cylinder carried by the first cup, flexible connecting means connected with the cylinder and
15 adapted for connection with a train line pipe, said cylinder having a valve opening

therein, packing for said cylinder to produce an air tight cylinder, a valve tube carried by the second cup and adapted for movement with the latter, said valve tube 20 having an opening adapted for registration with the opening in the cylinder, and means for limiting the movement of said tube and said inner cup.

In testimony whereof I have signed my 25 name to this specification in the presence of two subscribing witnesses.

WILLIAM M. SMITH.

Witnesses:

G. W. KOFF,

W. M. TAYLOR.