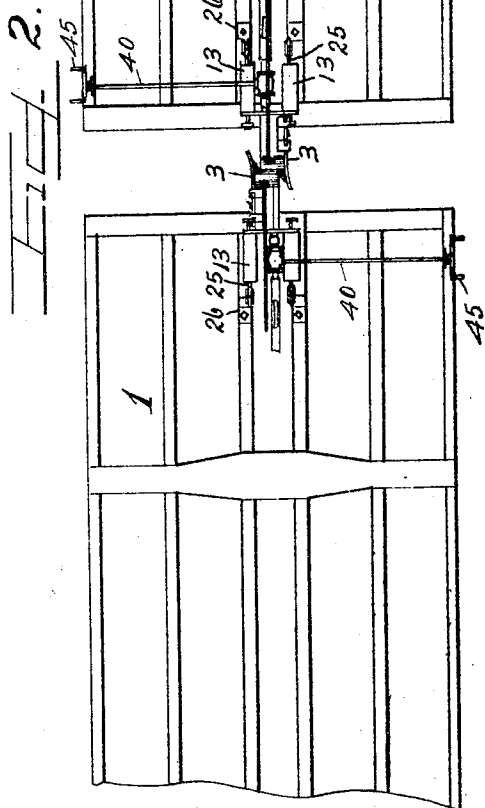
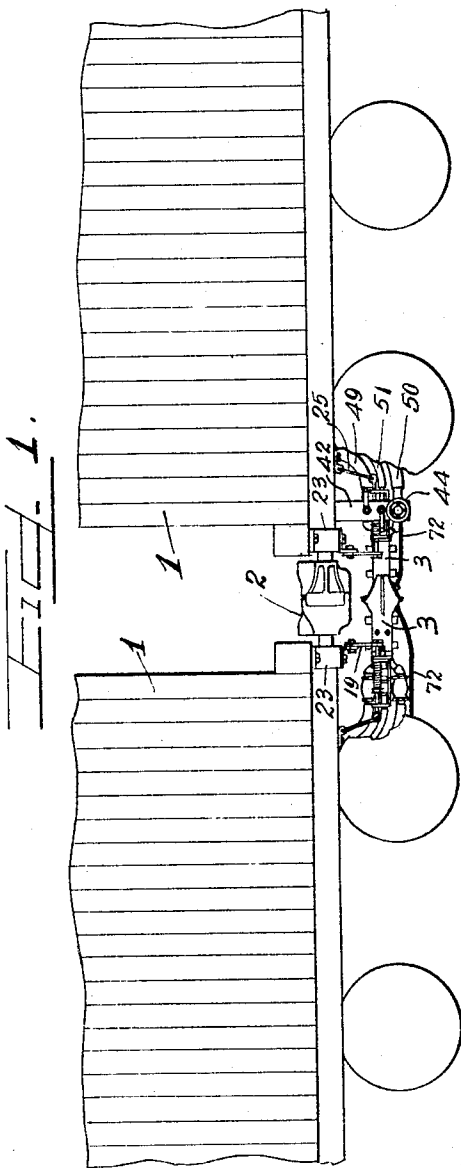


J. F. JONES.
 AUTOMATIC COUPLING.
 APPLICATION FILED JAN. 14, 1918.

1,324,741.

Patented Dec. 9, 1919.

4 SHEETS—SHEET 1.



Witnesses
J. W. Ingell
Charles H. Hills, Jr.

BY

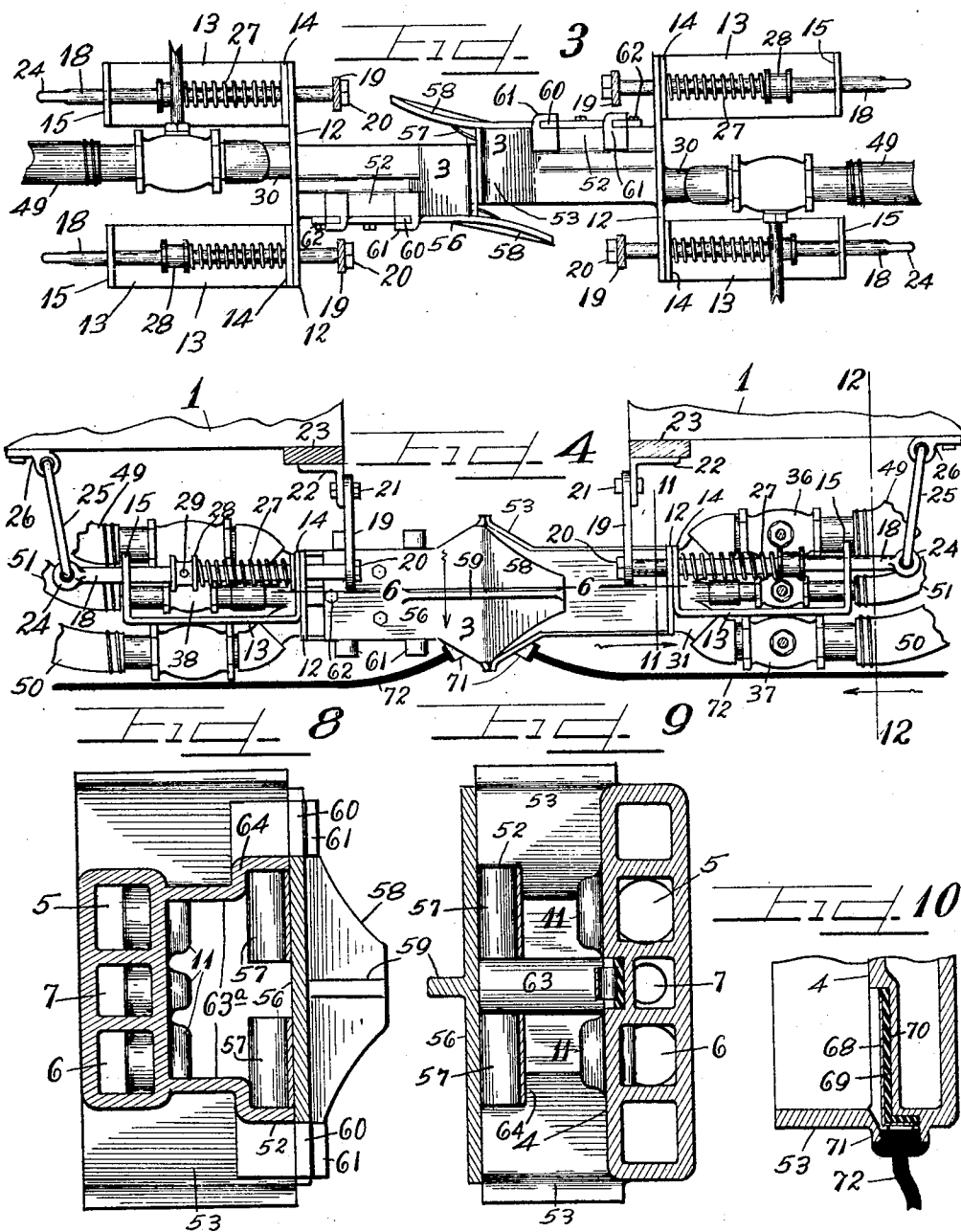
Inventor
John F. Jones
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4 SHEETS—SHEET 2.



Witnesses
J. W. Angell
Charles Hill

Inventor
John F. Jones
Charles Hill Att.

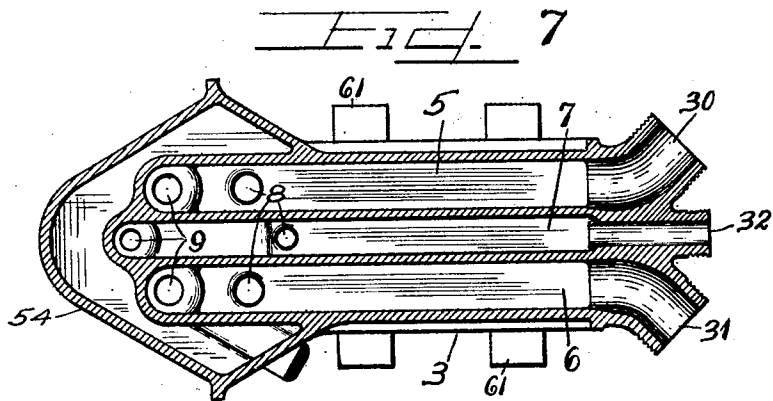
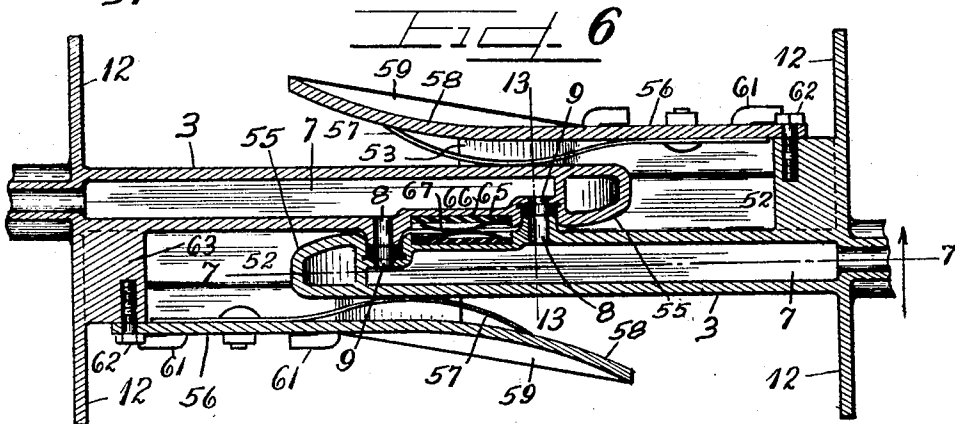
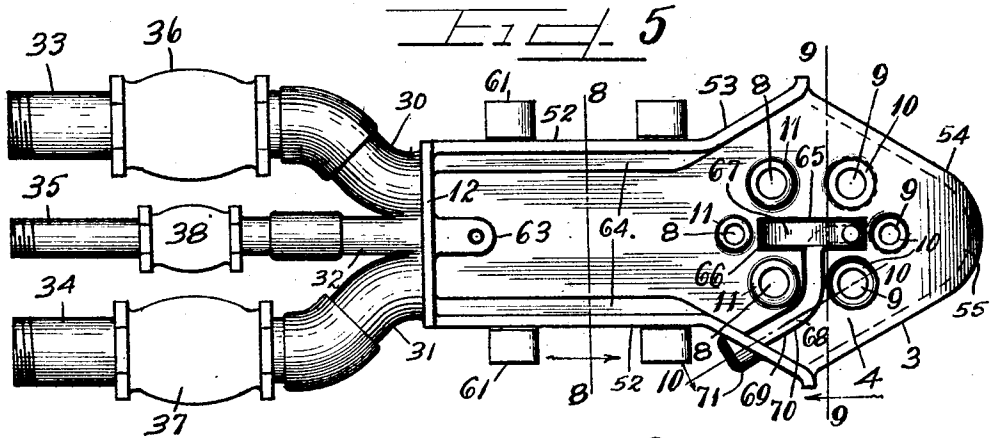
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4 SHEETS—SHEET 3.



Witnesses
J. W. Angell
Charles Phelps

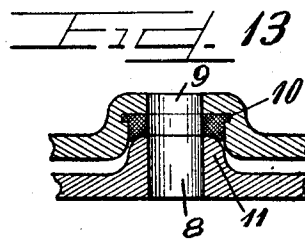
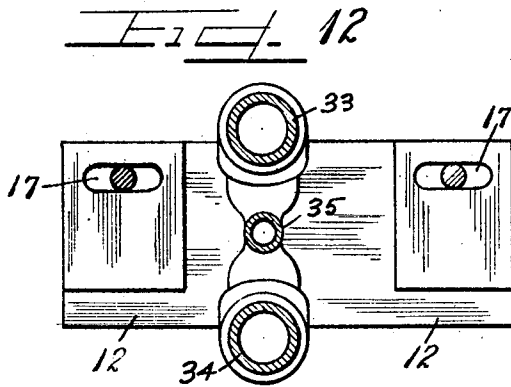
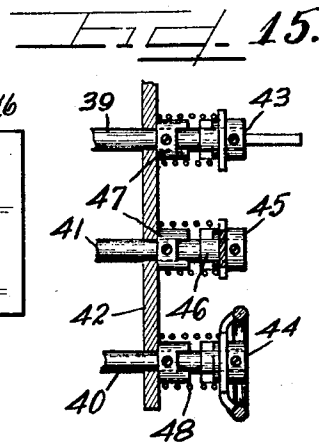
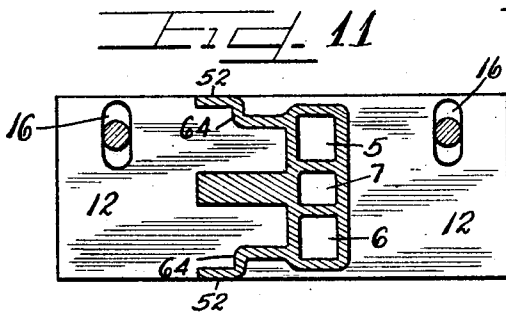
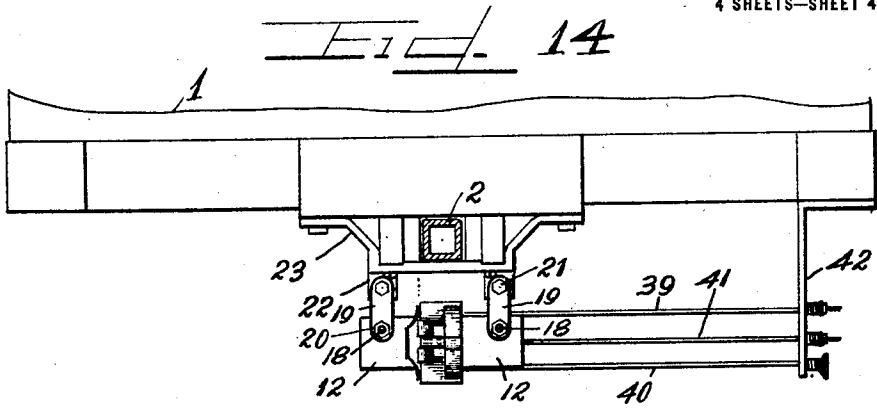
Inventor
John F. Jones
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4 SHEETS—SHEET 4.



Witnesses
J. W. Angell
Charles Hillis

Inventor
John F. Jones
 By *Charles Hillis* Atty.

UNITED STATES PATENT OFFICE.

JOHN F. JONES, OF KEUTERVILLE, IDAHO, ASSIGNOR TO DUPLEX COUPLER COMPANY,
A CORPORATION OF MONTANA.

AUTOMATIC COUPLING.

1,324,741.

Specification of Letters Patent.

Patented Dec. 9, 1919.

Application filed January 14, 1918. Serial No. 211,779.

To all whom it may concern:

Be it known that I, JOHN F. JONES, a citizen of the United States, and a resident of the village of Keuterville, in the county of Idaho and State of Idaho, have invented certain new and useful Improvements in Automatic Couplings; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention has reference more particularly to couplers such as are used in connection with railway cars for connecting air and steam pipes or making other similar connections between adjoining cars.

The object of my invention is to provide coupling means of this character, which when forced together will automatically interengage in the proper position to provide communication between or operative connection between parts of the two cars.

A further object of the invention is to provide a construction wherein pressure is constantly applied to retain the parts in the interlocked condition.

Another object of the invention is to provide suitable supporting means which will permit the coupler to adapt itself to changes in the relative positions of the two adjoining cars such as rounding curves, swinging of the car from side to side, differences in the height due to irregularities of the rails, etc.

Another object of the invention is to provide coupling means whereby the hose may be placed under the car so as not to be exposed to the danger of damage as it is when between the cars.

Another object of the invention is to provide a plurality of springs which apply pressure at a number of points so as to hold the coupling parts in close engagement whereby breakage or separation of the parts is ordinarily prevented.

A further object of the invention is to provide in connection with coupling means for fluid ducts, parts for making electrical connections which are automatically engaged when the coupling is in service.

The invention also has other important objects which will be apparent from the disclosure in the specification and drawings.

The invention (in a preferred form) is

illustrated in the drawings and hereinafter more fully described.

In the drawings:

Figure 1 is a side view of a complete coupler embodying my invention, and shows portions of two cars to which it is applied.

Fig. 2 is a bottom view of the parts shown in Fig. 1.

Fig. 3 is an enlarged top view of the coupler shown in Fig. 1, detached from the cars.

Fig. 4 is a side view of the coupler shown in Fig. 3.

Fig. 5 is an inside view of one of the coupler members with the cover plate removed.

Fig. 6 is a horizontal sectional view through a complete coupler taken on the line 6—6 of Fig. 4.

Fig. 7 is a sectional view of a single coupler member on line 7—7 of Fig. 6.

Fig. 8 is an enlarged sectional view on line 8—8 of Fig. 5.

Fig. 9 is an enlarged sectional view on line 9—9 of Fig. 5.

Fig. 10 is an enlarged fragmentary sectional view on line 10—10 of Fig. 5.

Fig. 11 is an enlarged sectional view on line 11—11 of Fig. 4.

Fig. 12 is an enlarged sectional view on line 12—12 of Fig. 4.

Fig. 13 is an enlarged fragmentary sectional view on line 13—13 of Fig. 6, showing the duct connecting means of the coupler.

Fig. 14 is an end view of my coupling device showing portions of the car to which it is attached.

Fig. 15 is an enlarged view of the valve controlling means shown at the right hand of the Fig. 14.

As shown in the drawings:

The reference numeral 1, indicates portions of railway cars to which my device is attached and may be of any ordinary type for freight or passenger service. These cars are provided with the usual draft coupling 2, which holds the cars together and also spaces the cars to maintain the necessary amount of separation. My device consists of an auxiliary coupling member, one at each end of each car so that when the cars are connected, a corresponding auxiliary coupling member is provided on the adjoining ends of the two cars which will fit

together and connect the steam or air ducts and make any other similar connections that are desired. There is a coupling member or head indicated as a whole at 3, on each car, having an inner engaging diamond shaped face 4, provided with a plurality of openings at the forward end thereof, which are suitably arranged so that when two members are placed in the normal interlocked position, openings in the face 4, of one of said members will register with corresponding openings in the face 4, of the other of said members. In the present instance, provision is made for connecting air and steam ducts, and also for an electrical connection, and the member 3, is cored longitudinally to provide three separate passageways communicating with the openings in the face of the member, which passageways may be used for any desired purpose, but for the sake of illustration, we will assume that the passageway 5, is for compressed air for operating the air brake, the passageway 6, for steam for heating or other purposes, and the passageway 7, for compressed air for signaling purposes. Each of said passageways is provided at the forward end thereof with a pair of openings 8 and 9, the advanced one of which, indicated at 9, is formed in a circular depression or socket in the face 4, of the member 3, which is adapted to contain a packing ring or gasket 10, therein, and the other openings 8, are formed in a boss 11, which are raised on the face 4, of the member 3, and adapted, when a pair of members 3, are forced together, to engage in the recess around the opening 9, against the packing ring or washer 10, to make a tight connection between the matching openings in the adjoining coupling members 3. It will be noticed that by providing each passageway with a pair of openings 8 and 9, and providing a depression around each of the forward openings 9, and a boss around each of the rear openings 8, any two members will match when placed on the cars so that the faces 4, thereof, interengage, which construction makes it possible to use a uniform coupling member 3, for both parts of the coupling. The coupling members 3, are adapted to be mounted on the cars substantially midway of the width of the car, and with the face 4, thereof facing laterally and substantially in a vertical plane passing longitudinally through the center of the car, so that when the ends of two cars are brought together the faces 4 are in the correct position to having sliding interengagement.

For supporting the member 3, there are a pair of wings 12, adjacent the rear and extending laterally one on each side thereof, to which wings 12, are secured brackets or yokes 13, having the upturned flange 14, at the forward end, secured to the wing mem-

bers 12, and having a correspondingly upturned flange 15, at the opposite end thereof. The upturned flange 14, and wing members 12, are provided with vertical slots 16, and the rear upturned flange 15, with the transverse slot 17, and there is a supporting rod 18, passed through said slots 16 and 17. The forward ends of the rods 18, are inserted in the lower end of hangers or links 19, which are retained thereon by means of a nut 20, and the upper end of the links 19, are pivoted at 21, to lugs 22, depending from the drawbar bracket 23, so that the links 19, and the structure supported thereby, may swing laterally of the car. The rear ends of the rods 18, are looped as at 24, to provide eyes which pivotally engage the lower end of hangers or links 25, the upper ends of which are pivoted to brackets 26, secured to the sills of the car, which said links 25, enable the structure supported thereby to be swung laterally of the car. This gives to the coupling member 3, a considerable amplitude of movement to adapt itself to changes in relative positions of the two cars, and this is further effected by the vertical slots 16, and the horizontal slots 17, which engage the bars 18, and support the structure.

It is desirable that the members 3, be held together at a tension, and in order to provide longitudinal pressure on members 3, to hold them securely together as the cars to which they are attached move more or less apart, owing to the play in the coupling 2, there are coil springs 27, which are compressed on the rods 18, intermediate the upturned end 14, of the yoke 13, and a collar 28, fixed to the rods 18, by means of a pin 29, or otherwise, so as to exert a tension to move the yoke 14, and the coupling member 3, connected therewith, forwardly from the end of the car, the amount of projection being limited by contact of the wing members 12, with the links 19, and the relation of the parts is such that when the couplings 3, of adjoining cars are interengaged, the springs 27, are contracted from the normal position somewhat as shown in Figs. 3 and 4, so that the members 3, are capable of projection or retraction, as made necessary by the movement of the cars.

The passageways 5, 6 and 7, are provided at the rear end of the member 3, with tubular extensions 30, 31 and 32, respectively, which are threaded for pipe connection, the outer tubular extensions 30 and 31, being preferably diverged to provide necessary spacing for pipe connection, and there are provided pipe extensions 33, 34 and 35, each of which has a valve interposed therein, which are indicated respectively at 36, 37 and 38, the stems 39, 40 and 41, of which, are extended to the side of the car to facilitate operation of the valves.

The outer ends of said stems are supported by a bracket 42 secured to and depending from a sill member of the car, and are preferably provided with operating members 43, 44 and 45, loose upon the valve stem. These operating members have clutch lugs 46, adapted to engage clutch members 47, on the stems for turning the stems and operating the valves, said clutch members 47, being normally held in separated relation by means of springs 48, so as to require an inward pressure on the valve operating members 43, 44 and 45, before the valves can be turned. This construction is provided to prevent meddling with the valves or operation thereof by persons unfamiliar with their manner of operation. These valve operating members may be in the form of cranks, as shown at 43 and 45, or hand wheels as shown at 44.

Main pipes to which the pipes 33, 34 and 35, are connected, are usually extended from end to end of the car to provide continuous connections from car to car, and these main pipes are connected intermediate of their ends with the mechanisms supplied thereby. As the members 3, and parts connected therewith, are movable, it is necessary to provide flexible connections from the pipes 33, 34 and 35, to their respective main pipes running lengthwise of the car. For this purpose, there are pieces of flexible hose, indicated at 49, 50 and 51, which are secured at one end to the pipes 33, 34 and 35, and at their other ends to the main pipes with which they communicate. It will be observed that with the construction which I have provided, the flexible hose is placed under the body of the car instead of intermediate of the car and is therefore exposed to less danger of injury.

Referring now to the particular construction of the members 3, it will be noted that the diamond shaped face portion 4, has a flange 52, at the rear and sides thereof, the forward portions 53, of which, are expanded as shown, to direct the tapered end 54, of the matching member 3, therebetween, and the forward end of the member 3, is beveled or sloped laterally to form a nose somewhat as shown at 55, in Fig. 6, to facilitate proper engagement of the member 3.

It is necessary that when the members 3, are in position so that the openings 8 and 9, match with the corresponding openings on the other member 3, that they shall be held firmly together so that the bosses 11, bear against the gasket 10, to avoid any leakage at the juncture. For this purpose, the flange 52, is extended upwardly from the face 4, of the member 3, so that the cover plate 56, will overlie the end of the companion member 3, when inserted in position, and a pair of springs 57, are provided on the inner face of each cover plate 56, which

engage against the surface of the member 3, and hold the said member 3, securely against the other member 3, with which it is connected. It will be observed that the springs 57, of both members 3, cooperate to hold the members 3, in engagement, and it will also be noted that the springs are so positioned that those on one of the members 3, engage near the end of the other member 3, at points adjacent the end openings 9, of the inserted members, and in this manner the pressure is distributed so that pressure is applied substantially at each set of openings 8 or 9, and liability of leakage thereby reduced.

The cover plate 56, overlies the entire surface 4, of the member 3, to which it is attached, so as to serve as a protection for the connecting parts on the face 4, and the outer end of the member 56, is curved outwardly as at 58, to direct the engaging end of the companion member 3, to the proper position between the face 4, and cover plate 56, and a rib 59, on the curved portion 58, serves to stiffen this directing portion and prevent breakage due to impact of the companion member 3, therewith. The plate 56, is made removable, so that access may be had to the connecting parts on the face 4, and has lugs 60, projecting from the sides thereof, which engage in slotted lugs or hooks 61, at the upper edge of the flange 52, to hold the plate 56, securely against the upper edge of the flange 52, and the plate is held from disengagement with the slotted lugs 61, by means of a cap screw 62, threaded into the rib 63, projecting from the surface 4, of the member 3, intermediate the side portions of the flange 52, as shown in Fig. 5.

The projection of one member 3, forward, into the other member 3, is limited by engagement of the tapered end 54, with the flared portions 53, of the flanges 52, and in order to provide length for engagement and also for the purpose of strengthening the flanges, the flanges 52, are spaced closer together adjacent the surface 4, as at 63^a, in Fig. 8, so as to provide an outturned portion or ledge 64, which acts as a reinforcing rib. This ledge also serves to limit the expansion of the springs 57, so that they will not extend sufficiently to interfere with the insertion of the companion member 3.

For the purpose of providing electrical connection from one car to another, the face 4, of the member 3, is provided intermediate of the openings 8 and 9, with a recess 65, lined with an insulating material 66, and a spring contact member 67, is seated in the insulated recess 65, the said spring being bellied, as shown in Fig. 6, so that when two members 3, are brought together, the contact springs 67, will engage one another with sufficient pressure to insure a good contact. A conductor 68, is embedded in insulating

material 69, in a groove 70, extending from the groove 65, to the boss 71, on the outer face of the flange 53, the inner end of said conductor being connected with the spring
 5 67, and the outer end thereof is connected with an insulated conductor 72, which is secured to the boss 71. The other end of the conductor 72, may be led to the required point in the car to which current is to be
 10 supplied.

The operation is as follows:

When the ends of the cars are brought together so that the coupling 2, will connect the cars, the ends of the members 3, enter the
 15 flared outer end of the coupling member of the other car and are directed by the curved surface 58, of a cover plate 56, and the flanges 53, to the position in which the openings 8 and 9, of the two members 3, register. This
 20 position is reached before the cars are entirely coupled, and further relative movement of the members 3, is prevented by engagement of the tapered ends 54, with the flanges 53. Further approximation of the
 25 cars causes a compression of the springs 57, and gives to the members 3, sufficient pressure to hold them securely interlocked. Each member 3, as it is inserted in the opening therefor in the companion member, contracts
 30 or flattens the springs 57, in the opposite member, and the tension of these springs forces the bosses 11, of each of the members 3, against the gaskets 10, in the socket or matching cavity of the other member 3, and
 35 holds them firmly in engagement so as to prevent leakage. The valves 36, 37, and 38, may then be operated on the side of the car by means of their respective valve controlling members 43, 44 and 45, to adjust the valve
 40 as desired, and the coupling, when so engaged, provides communication through the openings 8 and 9, from one car to another. The contact members 67, are also then in engagement and close the circuit between the
 45 adjoining cars so that current can be supplied from one car to the other.

As the car is set in operation, any changes in the separation of the cars due to play in the coupling 2, is automatically met by the
 50 springs 27, so as to prevent separation of the members 3, and said springs likewise serve to provide sufficient flexibility so that the members 3, will be held together when the cars are rounding a curve. Other move-
 55 ments of the cars are provided for by the pivotal mounting of the structure by means of the links 21 and 25, and also by the slotted openings 16 and 17, through which the rods 18, are passed.

The separation of the coupling member 3, is accomplished without manual attention, by merely pulling the members apart. When the coupling 2, is unfastened, and the cars are separated the members 3, are discon-
 65 nected by such separation.

I am aware that numerous details may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted otherwise than necessitated
 70 by the prior art.

I claim as my invention:

1. In a device of the class described the combination of drawbars, a pair of coupling members having passageways and matching
 75 openings therefrom, means for supporting said coupling members so as to be moved independently of the drawbars, cover plates removably secured on said coupling members, and springs removably secured to the
 80 inner surfaces of said cover plates for holding the members in engagement so that the matching openings thereof provide communication between the passageways of the two coupling members. 85

2. In a device of the class described the combination with a pair of coupling members having passageways and matching openings therefrom, mechanisms for suspending the said coupling members so as to be cap-
 90 able of longitudinal, lateral, and vertical movement, cover plates on said coupling members, lugs projecting from the sides thereof, interengaging means on said coupling members for providing a lateral ten-
 95 sion for holding the coupling members in engagement with the matching openings in alinement, to afford communication between the passageways of said coupling members, springs on said cover plates for applying a
 100 longitudinal tension on said coupling members to prevent separation of the same, and hooked members on said coupling members adapted to engage said lugs to hold the cover plates in position. 105

3. In a device of the class described the combination with a pair of coupling members each having passageways therein and a passaged socket adapted to receive a pas-
 110 saged projection of the other coupling member, a cover plate removably secured on each of said coupling members, and a spring secured on the inner surface of each cover plate adapted to engage the other coupling member for holding the interengaging parts
 115 of the coupling members together to provide proper communication between the passageways of the coupling members.

4. The combination with a pair of adjoining car frames, of a coupling member
 120 mounted on each car frame and adapted to engage the coupling member on the other car frame, the said coupling members being provided with fluid passageways and interengaging means adapted to provide
 125 communication from the passageway of one coupling member to the passageway of the other coupling member, duct members under the car frame communicating with the passageways of the coupling members; 130

valves in said duct members, and normally disengaged clutch members at the side of the car frame for operating the valves.

5 5. In a train line-pipe coupling, two heads which have inner faces that are substantially diamond shaped in plan, the inner angular edges of said heads having outwardly extending flanges, and the outer edges of the said heads being inclined, the
10 inner faces of each of the heads having an annular boss and an annular pocket, a compressible gasket in each of the pockets, and each pocket and boss having a port communicating with the bore of the heads, and a
15 flat arched spring secured to each of the heads and disposed between the flanges of the respective heads and designed to contact with the outer inclined edges of the said heads and to force the bosses thereof into the
20 pockets of the said heads.

6. In a train line-coupling, hangers, a bracket loosely arranged on each of the hangers, metallic train line-pipes having valves therein, two coupler heads connected
25 with said train line-pipes, each head provided with supporting members attached to the respective brackets, means secured on the hangers, a spring upon each of the hangers between the outer face of the respective
30 brackets and said means for holding the heads together, said heads each having an inner straight face which is substantially diamond shaped in plan, outwardly extending flanges on said heads, an annular boss
35 and an annular pocket on each of the straight faces of said heads and having ports communicating with the bores of said heads, a compressible gasket in each of the pockets, a flat spring removably secured to
40 each of the heads, and having a rounded portion disposed between the flanges of said heads and designed, when the heads are brought together to force the bosses into said pockets and against the gaskets therein.

45 7. In a train line-pipe coupling, train pipes, coupling heads provided with pipe members adapted to be connected with said train pipes, hangers, brackets adjustably

supported on said hangers, said coupling heads attached to said brackets, a spring on
50 each of the hangers exerting a stress to hold said heads extended, said coupling heads having inner straight faces and rounded ends, flanges on the edges of the inner angular portions of the heads, a flat
55 spring removably secured to each of the heads and having a rounded portion arranged between the referred to flanges, annular bosses having rounded peripheries on each of the straight faces of the respective
60 heads, each of said straight faces having annular pockets disposed outward of the referred to bosses, a compressible gasket in each of the pockets, said bosses and pockets having ports communicating with the bore
65 of the heads and with the pipes therefor, and said last mentioned springs designed to contact with the outer faces of the respective heads to force the bosses thereof into the pockets of said respective heads, when
70 the heads are brought together.

8. In a device for the purpose set forth, two coupling heads, each having an inner straight face and a rounded closed end, directing flanges on each of said straight
75 faces, an annular boss on each of the straight faces, each of said straight faces having an annular pocket disposed outward of the boss, a compressible element in each of the pockets, and said bosses and pockets having ports
80 communicating with the bores of the heads, spring means arranged on the straight face of each of the heads, designed to coengage with the outer face of the opposing head for forcing the bosses of the heads into the
85 pockets thereof, and contact means on each of said heads adapted to engage one another when the heads are brought together.

In testimony whereof I have hereunto subscribed my name in the presence of two sub-
90 scribing witnesses.

JOHN F. JONES.

Witnesses:

GEO. M. ROBERTSON,
W. W. FLINT.