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July 11, 1939. A. J. BAZELEY 2,165,330

TRAIN LINE CONNECTOR

Filed June 16, 1936 3 Sheets-Sheet 1

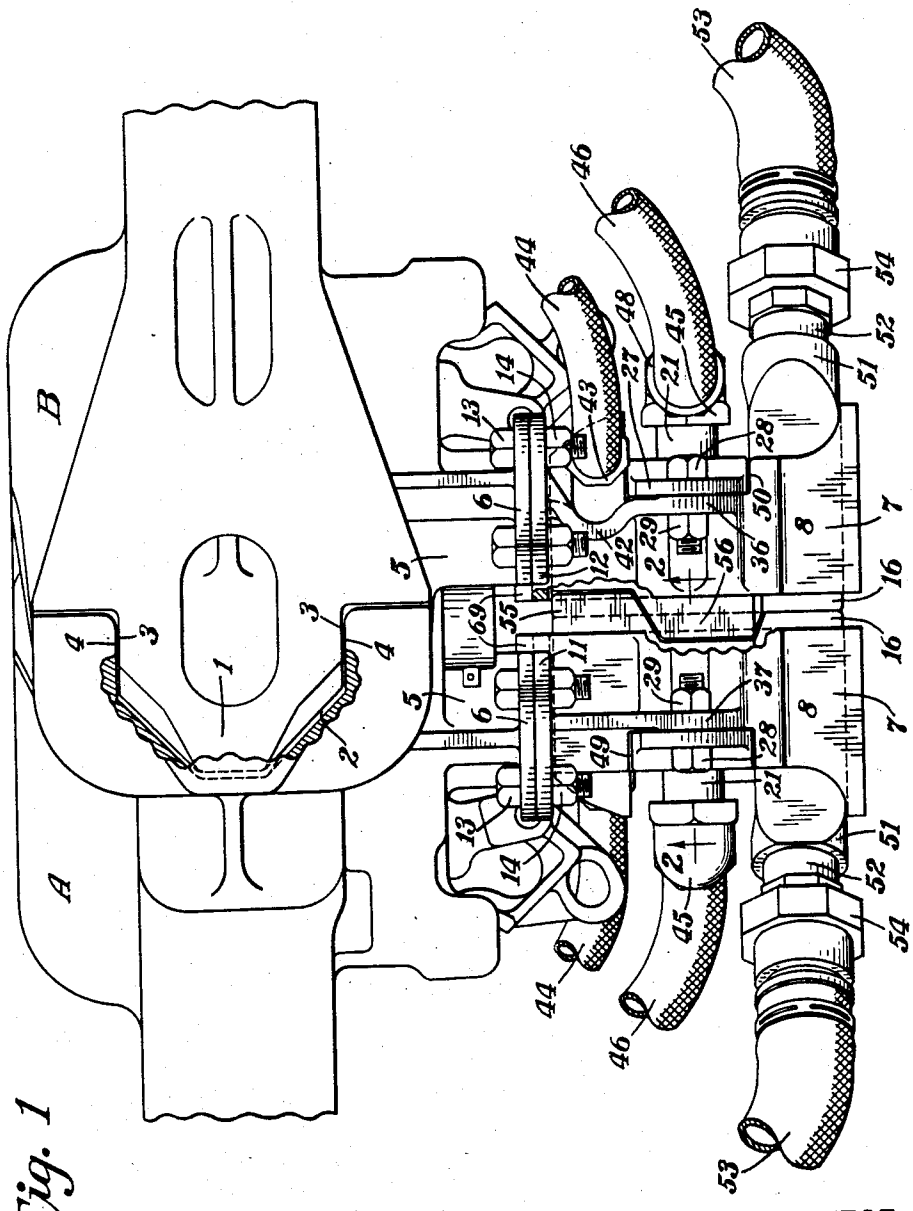


Fig. 1

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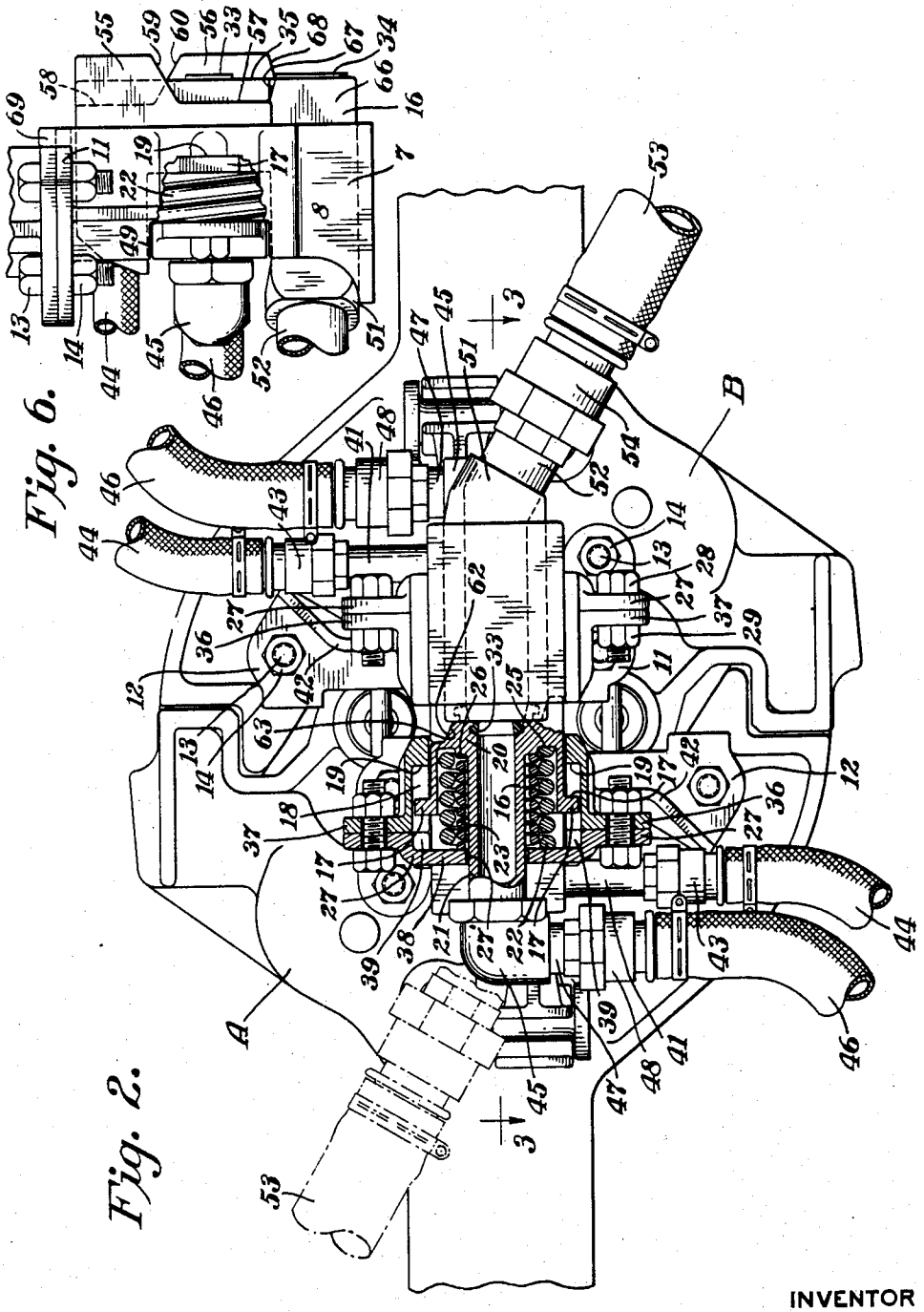


Fig. 6.

Fig. 2.

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Fig. 3.

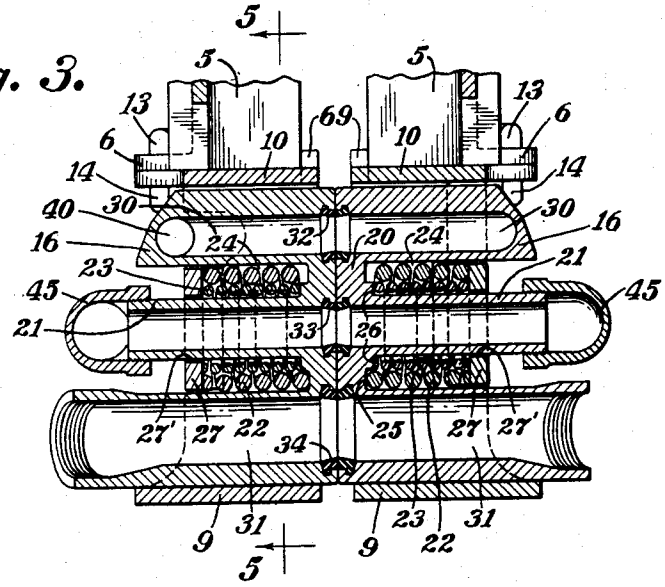


Fig. 4.

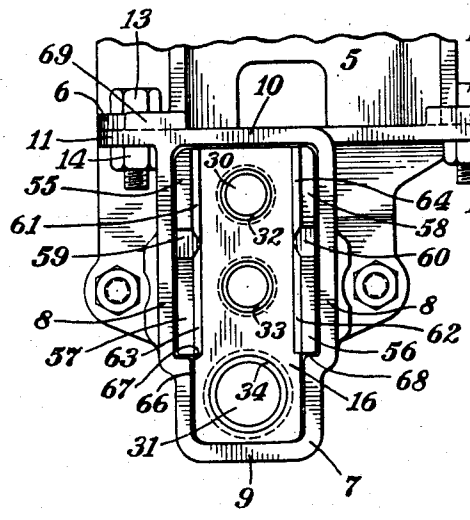
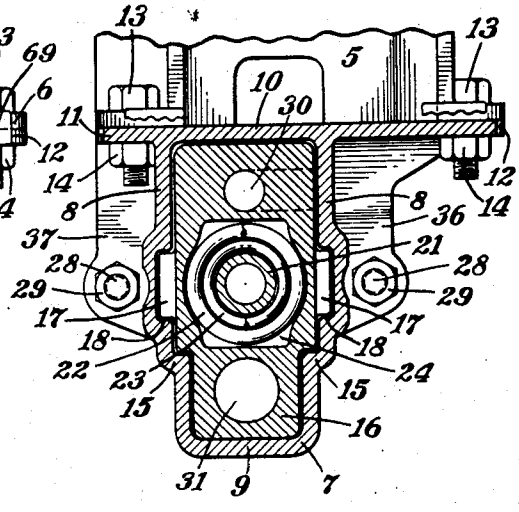


Fig. 5.



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TRAIN LINE CONNECTOR

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Application June 16, 1936, Serial No. 85,465

15 Claims. (Cl. 285—24)

This invention relates to train line connectors, particularly of the type designed for use with couplers that are rigidly interlocked. My invention comprises a novel mechanism simple in construction and positive in operation and includes a pair of relatively movable members, one of which is fastened to the under side of the car coupler and the other movable with respect to the first member and provided with suitable connections and ports for the air, signal and steam lines. The novel features to be described and claimed will be more clearly understood in conjunction with the accompanying drawings, in which:

Figure 1 is a view in side elevation of a pair of my train line connectors applied to interlocked couplers.

Figure 2 is a bottom plan view of Figure 1 with a sectional view of one of the connectors taken on line 2—2 of Figure 1.

Figure 3 is a vertical sectional view through a pair of engaging connectors, taken on line 3—3 of Figure 2.

Figure 4 is a front view of a connector.

Figure 5 is a transverse vertical sectional view taken on line 5—5 of Figure 3, and

Figure 6 is an elevational view showing a connector in uncoupled position.

Referring to the drawings, I have shown my improved connector in conjunction with a typical tight lock coupler, similar to the one shown in my application Serial No. 53,012, filed December 5, 1935, although it will be understood that the connector may be used with any suitable tight lock coupler. In the drawings the couplers A and B are similar in construction, each being provided with projection 1 adapted to enter a recess 2 in the opposing coupler to align and position the couplers during the coupling operation. The horizontal surfaces 3, 3 of each projection are positioned between corresponding surfaces 4, 4 of each recess to limit relative vertical movements between mated couplers. Extending downward from the bottom of each coupler is a vertical web 5 terminating in a substantially horizontal flange 6, which flange provides a seat or abutment for fastening the train line connector.

Referring particularly to Figs. 4, 5 and 6, it will be seen that the connector comprises an outer housing 7 provided with vertical walls 8, bottom wall 9, and top wall 10, forming a box-like structure, the top wall being extended laterally as at 11 and 12, so as to form horizontal flanges underlying flange 6 of the coupler. Openings are provided in the flanges 6, 11 and 12 to receive bolts 13, which together with nuts 14 secure the housing to the bottom of the coupler.

Mounted in each housing and adapted to slide relative thereto is a connector member 16. This member is provided with lateral projections 17 that enter longitudinally extending slots 18 in the side walls 8 of the housing member 7. These slots, as will be seen from Fig. 2, do not extend clear through the housing but terminate in shoulders or abutments 19, which abutments when engaged by the projections 17 serve to limit forward movement of the connector member relative to the housing. Side walls 8 of the housing are shown offset at 15 and the lower end of member 16 narrowed a corresponding amount so as to prevent incorrect assembly of the parts. If desired, this construction may be omitted without affecting the operation of the device.

Extending rearwardly from the front portion 20 of the connector member is a hollow projection 21 which serves as a conduit for the air used to operate the brakes and also forms positioning means for springs 22 and 23, which springs are housed in a recess 24 in the connector member 16. These springs bear at one end against abutments 25 and 26 in the forward part of the recess and at the other end against a transversely extending member 27. Side walls 8 are recessed at 49 and 50 to receive the ends of member 27 and the latter is secured to laterally extending flanges 36 and 37 of the housing by bolts 28 and nuts 29. An opening 27' in member 27 receives the rearward projection 21 of member 16. The purpose of the recesses 49, 50 is to position member 27 forwardly a distance such that the heads of bolts 28 will not intefere with the train line connections to be later described. Member 27 is offset rearwardly intermediate the ends thereof, as at 38, and provided with slots 39, 39 which in effect are continuations of slots 18 so as to obtain the desired rearward movement of the connector member relative to the housing. When the member 27 is assembled with the housing, springs 22, 23 are placed under initial compression, so that when the connector is not coupled with a mating connector the springs move connector member 16 forward relative to the housing until projections 17 engage the abutments 19.

It will be noted that considerable clearance is provided between connector member 16 and the inner walls of housing 7 and also between projection 21 and opening 27' in member 27. This clearance assures flexibility between the housing and connector member so that two mated connectors in effect float in their housings and are

unaffected by slight movements that may take place between the cooperating couplers.

Above and below projection **21** the connector member is provided with openings **30** and **31** for the signal and steam lines respectively of the car. The front portion of member **16** is formed with gasket seats receiving the gaskets **32**, **33** and **34** for the signal, air and steam lines respectively. These gaskets are of the usual type and when the connector is uncoupled, are adapted to project a slight distance beyond the front face **35** of the connector member. When two connectors are engaged in the coupling operation of adjacent cars they are moved rearwardly, thus compressing springs **22** and **23** in each connector. The pressure exerted by the springs forces the gaskets into close contact to prevent escape of the air or steam.

The opening **30** extends at right angles to the connector at the rear end thereof as at **40** and may be threaded to receive pipe **41**. As will be clearly seen from Figs. 1 and 2, the flange **36** has been curved in a forward direction at **42** so as to provide a recess to receive the pipe when the connector is in a forward position. The pipe **41** extends laterally outward beyond the flange **36**, so that the union **43** which joins the pipe with the signal hose connection **44** will not come into contact with said flange.

The hollow projection **21** is threaded at its rear end to receive an elbow **45** which is joined to the air hose **46** by means of a pipe **47** and a union **48**.

The opening **31** for the steam line is preferably bent at an angle at the rear of the connector, as shown at **51**, and threaded to receive a pipe **52** that is connected with the steam hose **53** by a union **54**. In this manner the steam hose connection is positioned laterally of the center line of the coupler and thus interference with the carry iron and other parts of the car structure is avoided. It will be noted that at the left side of Fig. 2 the steam hose connection on the connector is illustrated by dot-dash lines, full line not being shown due to the section being taken on the transverse center line of the connector.

It will be understood that the train line connectors will be prevented from separating by the interengaged knuckles and locking mechanism of the car couplers. I prefer to take care of the preliminary alignment of the connectors both vertically and laterally by means of the guiding surfaces on the car couplers. To this end the front faces of the connectors, even when projected fully forwardly, are positioned to the rear of the gathering surfaces of the respective car couplers. However, it is not feasible to align the connectors by such means to such an extent that they will at all times come into an exact alignment. I, therefore, provide the connectors with guiding surfaces sufficient to perform any additional gathering that may be necessary to make them properly engage each other.

Referring particularly to Figs. 1, 4 and 6, each connector is formed with an upper forward projection **55**, which for the purpose of illustration I have shown on the same side of the connector as the knuckle of the car coupler. On the opposite side of the connector and below projection **55** is another projection **56**. Directly below projection **55** and directly above projection **56** the member **16** has been recessed at **57** and **58**, respectively. The bottom of projection **55** and the top of projection **56** are formed with oppositely sloping surfaces **59** and **60**, respectively, which surfaces extend into and form the top and bottom walls of the corresponding recesses respectively. When a pair of connectors are brought together the projection **55** of one connector will enter the recess **58** of the opposing connector, and at the same time projection **56** of the first connector will enter recess **57** of the other. If the connectors are slightly out of alignment in a vertical direction, the sloping surfaces **59** and **60**, one on each connector, will engage, and as the connectors continue to move toward each other, the above surfaces will bring them into vertical alignment. It will be apparent that no matter which connector happens to be above the other, one surface **59** and one surface **60** on each connector will be sufficient to gather the mating connectors within the gathering range of these surfaces.

I have arranged the springs in my connector and provided for sufficient longitudinal movement of the connector member such that if one or more of the springs in one of two mating connectors are broken, the connector member of the opposite connector will force the connector member of the first connector into its housing, the capacity and travel of the springs of the second connector being sufficient to maintain a tight connection between the gaskets.

To assist in aligning the connectors in a horizontal direction the projections **55** and **56** may be beveled as at **61** and **62**, and in a similar manner the recesses **57** and **58** may be constructed so that their vertical walls are sloped as at **63** and **64**. The projection and recess engagement also serves to prevent relative vertical and lateral movements between the mated connectors. It will be observed that wall **63** of recess **57** is offset inwardly from wall **66** of member **16**, forming a shoulder **67** at the bottom of the recess. The bottom surface **68** of the projection **56** on the opposing connector will engage the shoulder **67** and also prevent relative vertical movements of the connectors.

If desired, the connector housing **7** may be provided with projections **69**, **69** extending upwardly from flanges **11** and **12** in front of the horizontal flange **6** on the coupler. These projections will prevent rearward movement of the housing relative to the coupler, and thus relieve the bolts **13** from shearing stresses.

The above described connector is for use particularly in passenger service. In freight service where no steam line is used the bottom wall **9** may be moved up to a point in line with the offset portion **15** of side walls **8** of the housing and bottom part of connector member **16** cut off a like amount to eliminate the steam line port **31**. The connector will otherwise function in the same manner as the passenger connector.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

What I claim is:

1. In a train line connector, a rectangular housing adapted to be fastened to a car coupler, a member substantially filling said housing and mounted therein for movement longitudinally thereof, said member being adapted to project forwardly and rearwardly of said housing and being provided with a plurality of ports adapted to be connected to the train lines, abutment **75**

means limiting forward movement of said member relative to said housing, a separable element fastened to said housing to the rear of said member, and spring means between the forward portion of said element urging said member forwardly toward said abutment means.

2. In a train line connector, a rectangular housing, a member substantially filling said housing, movably mounted therein and having a rearwardly extending hollow projection forming an air port adapted to be connected to an air line, said member being adapted to project forwardly and rearwardly of said housing, a spring surrounding said projection and bearing at one end on said member adjacent the forward end thereof, a separable element surrounding said projection and providing an abutment for the other end of said spring, said member being normally urged forwardly of said housing by said spring and adapted to engage a similar member on a mating connector.

3. In a train line connector, a housing adapted to be fastened to a car coupler, a member longitudinally movable within said housing, said member having a port adapted to be connected to an air service line and a rearwardly opening recess, said port comprising a hollow pipe extending through said recess, spring means surrounding said pipe and received within said recess for engagement with said member, and a follower for said spring means fastened to said housing.

4. In a train line connector, a housing adapted to be fastened to a car coupler, a member longitudinally movable within said housing, said member having a port adapted to be connected to an air service line and a rearwardly opening recess, said port comprising a hollow pipe extending through said recess, spring means surrounding said pipe and received within said recess for engagement with said member, and a follower for said spring means fastened to said housing, a groove in each side wall of said housing substantially in line with said recess said grooves terminating in abutments at their forward ends, and laterally extending lugs on said member entering said grooves and adapted to engage said abutments to limit relative movement between said housing and member in one direction.

5. In a train line connector, a housing adapted to be fastened to a car coupler, a member longitudinally movable within said housing, said member having an air port and a rearwardly opening recess in line with said port, said port being continued through said recess as a pipe, said recess having side walls formed as a continuation of the sides of said member, and a laterally extending lug at the rearmost extremity of each of said walls for reception in corresponding grooves in said housing, spring means surrounding said pipe and received within said recess for engagement with said member, and a follower member for said spring means fastened to said housing.

6. In a train line connector for railway cars, a housing, a member movably mounted in said housing and having an opening extending therethrough adapted to be connected to the train service line of the car, said member having a substantially vertical front face, guiding lugs projecting forwardly from the sides of said face, the outer surfaces of said lugs being within the lateral limits of said housing, one of said lugs being adjacent the top of said member and another lug being at a lower level than said first lug and on the opposite side of said face, said lugs being provided with oppositely sloping surfaces adapted to engage similar surfaces on a mating connector to bring said connectors into vertical alignment, said lugs, when two connectors are coupled, embracing the sides of the opposing connector to limit relative lateral movement thereof.

7. In a train line connector, a housing member, a connector member movably mounted in said housing member and formed with a rearwardly opening recess extending forwardly to adjacent the front of said connector member, spring means in said recess, abutment means at each end of said recess for the ends of said spring means, a groove in one of said members and a lug in the other of said members entering said groove, an end of said groove forming an abutment adapted to be engaged by said lug to limit forward movement of said connector member relative to said housing member.

8. In a train line connector, a housing member, a connector member movably mounted in said housing member and formed with a rearwardly opening recess extending forwardly to adjacent the front of said connector member, spring means in said recess bearing at one end against said connector member in the forward part of said recess, an element at the rear of said recess offset rearwardly at the center thereof to form an abutment for the other end of said spring means, a groove in one of said members and a lug in the other of said members entering said groove, an end of said groove forming an abutment adapted to be engaged by said lug to limit forward movement of said connector member relative to said housing member.

9. In a train line connector, a housing member, a connector member movably mounted in said housing member and formed with a rearwardly opening recess, spring means in said recess bearing at one end against said connector member in the forward part of said recess, an element at the rear of said recess offset rearwardly at the center thereof to form an abutment for the other end of said spring means, a groove in one of said members and a lug in the other of said members entering said groove, the forward end of said groove forming an abutment adapted to be engaged by said lug to limit forward movement of said connector member relative to said housing member, said element being formed with a groove adjacent said offset portion and in line with said first named groove and said lug being adapted to enter said second groove to permit the desired rearward movement of said connector member relative to said housing member.

10. In a train line connector a housing, a member movable in said housing, said member having a substantially vertical front face of less width than the portion rearwardly thereof, forwardly projecting lugs extending from opposite sides of said face, said lugs extending vertically over different portions of said face, said member being formed adjacent said face, and within the lateral extent of said rearward portion of said member, with rearwardly extending recesses one of said recesses being below one of said lugs and another of said recesses being above another of said lugs on the opposite side of said face from said first mentioned lug and recess, the lower surface of said first named lug and the upper surface of said second named lug extending into and forming respectively the upper and

lower surfaces of said first and second named recesses.

11. In a train line connector a housing, a member movable in said housing, said member having a substantially vertical front face, forwardly projecting lugs extending from opposite sides of said face, said lugs extending vertically over different portions of said face, said member being formed adjacent said face with rearwardly extending recesses, one of said recesses being below one of said lugs and another of said recesses being above another of said lugs on the opposite side of said face from said first mentioned lug and recess, the lower surface of said first mentioned lug and the upper surface of said second mentioned lug sloping in opposite directions and extending into and forming respectively the upper and lower surfaces of said first and second named recesses, said member and housing being constructed and arranged to permit said lugs to move into said housing when said connector is in engagement with a mating connector.

12. In a train line connector a housing comprising a top wall adapted to be secured to a car coupler, side walls depending from said top wall and a bottom wall joining said side walls, flanges connecting said top and side walls, a connector member movably mounted in said housing and formed with a rearwardly opening recess, spring means in said recess for urging said member forwardly in said housing, said side walls being recessed to points adjacent said flanges and an element in said recesses secured to said flanges and forming an abutment for said spring means.

13. In a train line connector a housing comprising a top wall adapted to be secured to a car coupler, side walls depending from said top wall and a bottom wall joining said side walls, laterally extending flanges connecting said top and side walls, a connector member movably mounted in said housing and having an air port therein, spring means for urging said member forwardly in said housing, a pipe element operatively connected to said air port and extending transversely of said member to a point laterally beyond one of said flanges, said latter flange being bent forwardly opposite said pipe element so as to maintain clearance between said flange and element when said member is in forward position.

14. In a train line connector, a housing adapted to be fastened to a car coupler and comprising top, bottom and side walls, a member longitudinally movable within said housing and having its outer surfaces substantially parallel to corresponding inner surfaces on said walls, said member being adapted to project forwardly and rearwardly of said housing and having a port, adapted to be connected to an air service line, and a rearwardly opening recess, said recess extending to the forward portion of said member, said port comprising a hollow pipe extending through said recess, spring means surrounding said pipe and received within said recess for engagement with said member, and a follower for said spring means fastened to said housing.

15. In a train line connector, a housing comprising a top wall adapted to be secured to a car coupler, side walls depending from said top wall and a bottom wall joining said side walls, flanges connecting said top and side walls, a connector member movably mounted in said housing and formed with a rearwardly opening recess, spring means in said recess for urging said member forwardly in said housing, said side walls being recessed to points adjacent said flanges and a separable element in said recesses secured to said flanges and forming an abutment for said spring means.

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