D. B. McTAGGART.

AUTOMATIC TRAIN PIPE CONNECTOR.

APPLICATION FILED OCT. 7, 1912.

1,094,670.

Patented Apr. 28, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

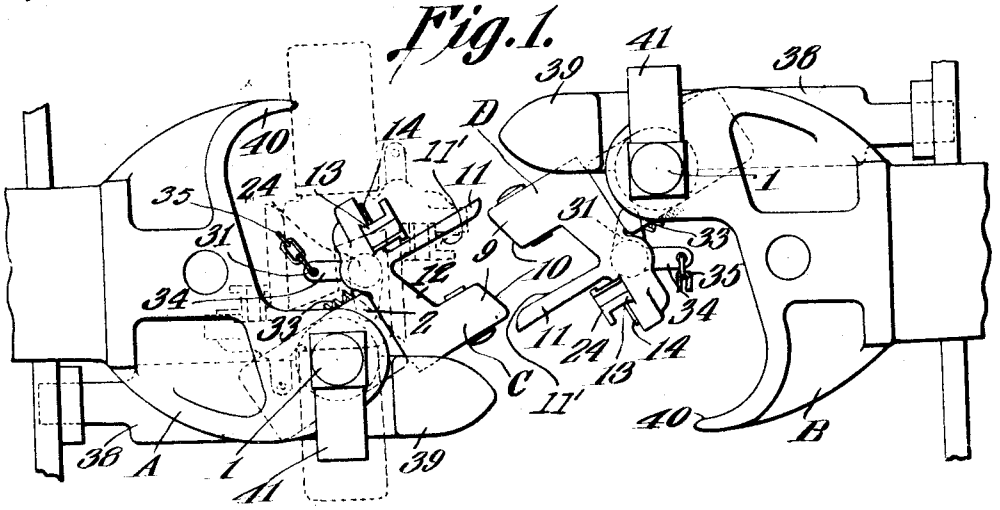


Fig. 2.

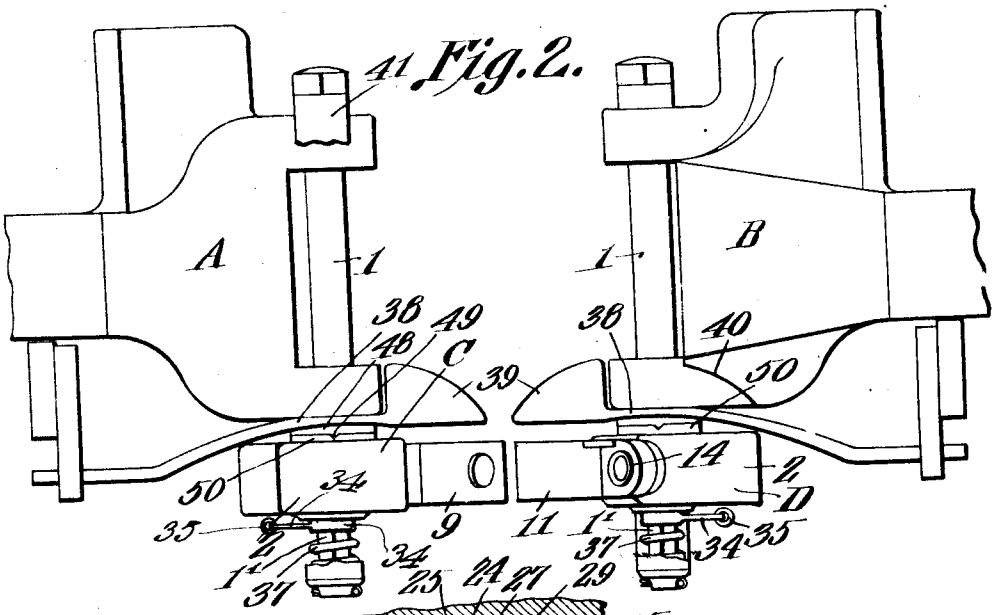


Fig. 6.

Witnesses

J. Gomein

E. F. Wilcox.

D. B. McTaggart
Inventor

by C. A. Snow & Co.
Attorneys

D. B. McTAGGART.

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2 SHEETS—SHEET 2

Fig. 3.

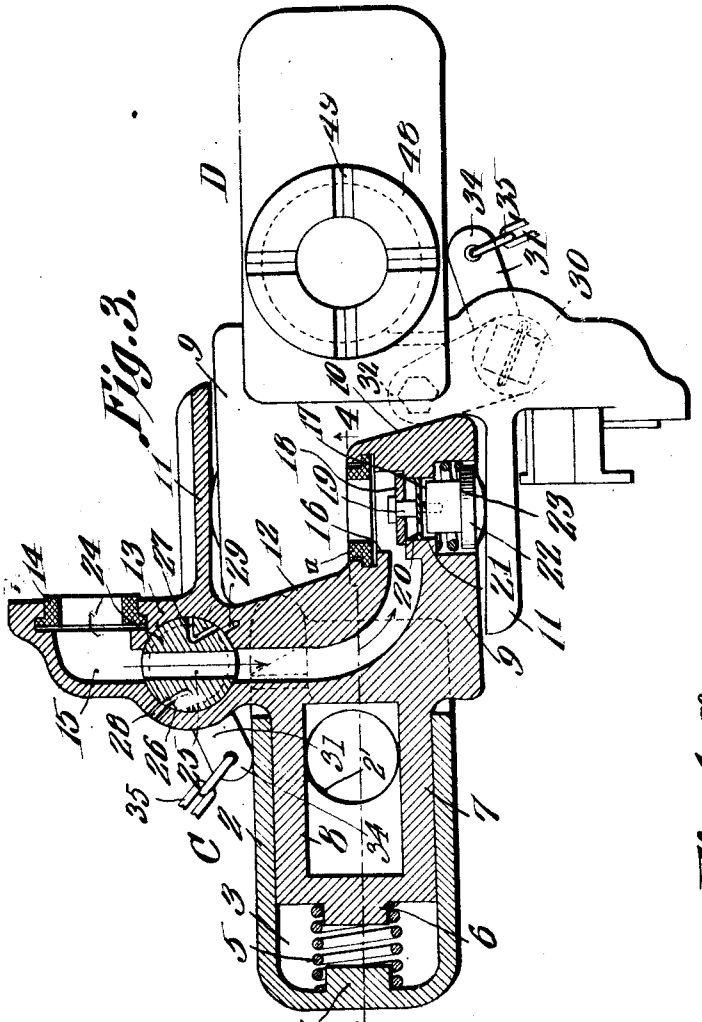


Fig. 4.

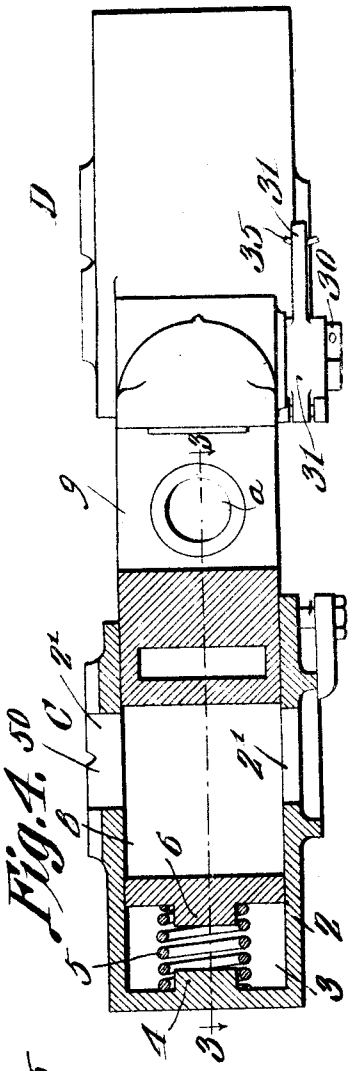
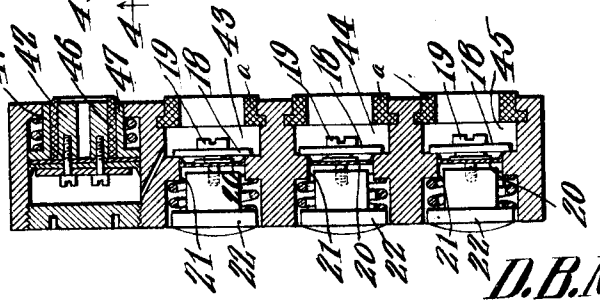


Fig. 5.



Witnesses

J. Tomeis

E. Swihart

D. B. McTaggart,
Inventor

by C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

DANIEL B. McTAGGART, OF BUTTE, MONTANA, ASSIGNOR OF ONE-HALF TO WILLIAM H. WOODRUFF, OF BUTTE, MONTANA.

AUTOMATIC TRAIN-PIPE CONNECTOR.

1,094,670. Specification of Letters Patent. Patented Apr. 28, 1914.

Application filed October 7, 1912. Serial No. 724,415.

To all whom it may concern:

Be it known that I, DANIEL B. McTAGGART, a citizen of the United States, residing at Butte, in the county of Silver Bow and State of Montana, have invented a new and useful Automatic Train-Pipe Connector, of which the following is a specification.

The present invention relates to improvements in automatic train pipe connectors, the primary object of the invention being the provision of a connector for train pipe and electrical connections upon passenger trains and air-brake pipe connections upon freight trains, the present invention being readily applied to cars now in use, without the discarding of the present equipments, and also being so constructed as to permit cars not equipped with the present connector to be manually connected thereto.

A further object of the present invention is the provision of means, whereby should the continuity of the air-brake system become broken or separated due to the breaking of a knuckle-joint or pin of a coupler, or the falling of a coupler, the system will be gradually vented, so that no emergency will result, but the train will be brought to a gradual stop at its rear end, while the forward end will be under the control of the engineman.

A still further object of the present invention is the provision of a train pipe connector, which is supported to the knuckle joint of a car coupler by means of the knuckle-pin, which permits of easy and quick installation of the present device without the necessity of placing the car in a shop, the installation being so simple, as to permit the adjustment and attachment of the device, while the car is in daily use.

A still further object of the present invention is the provision of a train pipe connector carried by the car-coupler and so mounted as to be brought into registration when non-alining car-couplers, due to the varying load conditions of the cars, are brought together, the train pipe ports of the connecters being brought primarily together before the car-couplers engage, the final engagement of the car-couplers moving the connector members from an inclined position to a right-angle and in locked position to insure the non-leakage of the connector ports, and the closure of the main valves.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings—Figure 1 is a top plan view of two abutting car-couplers with the present connector members in their initial connecting position, dotted lines illustrating their final locked position. Fig. 2 is a side elevation of the same. Fig. 3 is a top plan view of one connector member connected to another member, which is shown in horizontal section on line 3—3 of Fig. 4. Fig. 4 is a view in side elevation of one connector member with the other shown in section taken on line 4—4 of Fig. 3. Fig. 5 is a sectional view taken through the ported portion of a passenger equipment. Fig. 6 is a cross section showing the valve of the air-brake in closed and venting position.

Referring to the drawings, the letters A and B, designate the two car-couplers, which are of usual construction and are each provided with a knuckle-pin 1, the respective mating train pipe connector members C and D, being carried thereby and for limited swinging horizontal movement, as will presently appear. As each connector member is identical with the other the description of one will suffice for both, and in order to describe the simplest embodiment, a freight train equipment will be described first, and in which only the air-brake connection is carried.

Each connector member comprises the casing 2 having the knuckle-pin fitting apertures 2′, and provided with a socket 3, at the end of which is the spring centering and holding knob 4, for retaining one end of the projecting spring 5, whose outer end fits upon the centering knob 6 of the slidable shank 7. This shank 7 is provided with the elongated slot which fits about the pin 1, and thus permits the necessary sliding movement to the shank 7. This shank 7 carries or has formed integral therewith, a collecting head composed of the lug 9 of relatively great width and having the inclined outer face 10 and with the smaller guide arm or finger 11 in spaced relation to the lug 9, the

wall 12 being inclined to accommodate the inclined outer face 10 of the lug 9 of a mating member. Beyond the outer face of the guide arm or finger 11 is a lug or arm 13, whereby the coupler 14 may be coupled in the usual manner with the usual hose-pipe carried by the car, so that air will be directed through the port 15 in the direction of the arrows, Fig. 3, and through the port 16, formed in the inner face of the lug 9, and in co-active relation to a similar port of the mating connector. A venting port 17 is provided, so that the escaping air at the initial uncoupling and disconnecting of the mating connector members will not blow the port rings *a* out of place, and in order to control these ports, a disk valve 18 is provided. This disk valve 18 is carried by the screw 19, guided through a spider 20, mounted in the bore 21, the head 22 of the valve 18 being held outwardly with the disk valve 18 closed by means of the coiled spring 23, all as clearly shown in Fig. 3. This head 22 is actuated to be moved beyond the outer face of the lug 9, and in the path to be abutted by the inclined inner face 11′ of the finger guide 11, which upon its first engagement, and before the final registration of the mating ports 16, will move the plunger 22 inwardly to unseat the valve 18 and thus permit a slight leakage from the port or channel 15 through the bore 21 to the atmosphere, thus relieving the initial impact of the air so that the ports *a* will not be blown from their seats either at the first mating or the final unmating of the ports of two connectors. When the mating ports are in registration, the depressed portion of the face 11′, permits the spring 23 to move the head 22 outwardly and thus close the valve 18 and prevent leakage through the coupled connector at this point.

A valve 24 is carried by the lug 13, and is to close the channel 15, the same being provided with the port 25, and with the two venting ports 26 and 27, the port 26 being disposed to register with the vent port 28, as shown in Fig. 6, when the valve 24 is moved to close the channel 15, while the vent port 27 is in registration with the venting channel or port 29 in the lug 13, both of the ports 28 and 29 being open through the lug 13 to the atmosphere, and providing a venting means for the connector should an accident happen that would cause the mating members to suddenly separate, the valve 24 being moved from its proper open position, when the connectors are properly mated as shown in Fig. 3, to the position as shown in Fig. 6. The valve 24 as illustrated is operated automatically, the inner end 32 of the lever 31 thereof, being disposed to be engaged by the inclined outer face 10 of the opposite connector when the parts are moved to the position, as shown in Fig. 3, and thus forced away therefrom, so as to place the port of the valve in the position as shown in the sectional portion of the Fig. 3, so that proper communication is had with the train pipe. By this means the air-brake system is not too suddenly vented, but the rear section of the train is brought to a gradual stop while the engineman is permitted full control of the forward section of the train and can proceed a safe distance before being stopped.

The valve 24 has a stem 30, upon which is attached a bell-crank lever 31, the inner end 32 of which is disposed to be engaged by the outer face 10 of a mating connector member, which holds such valve 24 in the position as shown in Fig. 3, a spring 33 being employed to return the valve to the position as shown in Fig. 6, when the connectors disengage, either purposely or accidentally.

The end 34 of the bell-crank lever has connected thereto a pull chain 35, which is accessible to a trainman, who may pull the cord to rotate the valve 24 from the position as shown in Fig. 6 to that shown in Fig. 3, and to thus relieve the air pipes of the car from the air-pressure.

In order to properly support each connector member, and also to provide a means which will insure the proper registration of the mated members, should the car-couplers be out of horizontal alinement, due to variously loaded and empty cars, a spring 37 is disposed upon the lower end of the pin 1, and holds the member 2 upwardly toward the underside of the car-coupler, and carried by the car-coupler is the spring plate 38, whose inclined head 39 is disposed to be engaged by the end 40 of the mating car-coupler to be depressed to engage the upper face of the member 2, and thus move the connector member carried by the same car-coupler as the spring 38 to be moved downwardly and into alinement with the mating connector member, so that when the connectors first meet they will be in the position, as shown in Fig. 1, to be moved to the full horizontal, or dotted position, when the car-couplers have coupled. The spring 37, is also so anchored as to move the connector member from the dotted to the full line position when the connectors disengage. Where the knuckle-pins are too short to properly apply this connector, a yoke 41 is employed and fits upon the lower shouldered end 1′ of the pin 1, and thus retains the connector member from downward displacement, the spring 37 being mounted between the upper face of the lower end of the yoke and the underside of the member 2.

Where the connector is used in connection with electrically lighted passenger cars, the connector member is provided with the port constructions, as shown in Fig. 5, the

upper one 42 being the electrical connection, the next port 43 being the air signal port, the next port 44 being the air-brake port, while the lowermost port 45 is the steam heating port. By disposing the steam port lowermost, the liability of the valve in the air-brake connection being frozen is prevented, while the electrical connection 42 is so constructed that ice and snow are prevented by the rubber ring 46 from short-circuiting the connector rings 47 of the circuit connections.

As noted, the lower end of the pin 1 at 1′ is made square in cross-section, and upon this portion below the car coupler is placed a disk 48 which is permitted a sliding movement, but having a square aperture, is held against rotation. Upon the under face of this disk are radial ribs 49 which are disposed to register with the radial recesses upon the raised portion 50 of the casing 2. The spring plate 38 is about the pin 1 above the disk 48 and therefore is moved upon the upper face of the disk 48 to move the casing downwardly against its spring 37, and as the ribs 49 register with the recesses of the portion 50, the casing 2 is held frictionally against accidental oscillation, thus insuring the proper co-active relation between mating connector members when their carrying car-couplers are moved into coupled relation. The release of the car-couplers as will be noted from this structure simultaneously permits of the automatic release of the mated connector members, and the consequent closure of the valve 24.

What is claimed, is:—

1. The combination with a car-coupler, of a train pipe connector, having a socketed casing mounted for swinging movement upon the knuckle-pin of the car-coupler, a collector member having a shank slidably mounted upon the knuckle-pin within the socketed casing, a spring for holding the collector member projected, and means for moving the collector member for alinement with a mating collector member, such means being actuated by the collecting of two mating car-couplers.

2. The combination with a car-coupler, of a train pipe connector, having a socketed casing mounted for vertical sliding and horizontal swinging movement below the car-coupler, a spring for holding the casing toward the car-coupler, a spring projected collector member carried by the casing, and means engaging the casing and carried by the car-coupler to insure the horizontal registration of mating collector members when two car-couplers mate, the said means being actuated by the mating car-couplers as they move together.

3. The combination with a car-coupler, of a train pipe connector, having a casing mounted for vertical sliding and horizontal swinging movements upon the lower end of the knuckle-pin of the car-coupler, a spring for holding the casing toward the car-coupler mounted upon the knuckle-pin, a spring projected port carrying and collector member mounted in the casing and held against too far projection by the knuckle-pin, and means for alining mating members carried by the car-coupler and upon the knuckle-pin above the casing, said means being actuated by the mating car-coupler as the car-couplers move together.

4. The combination with a car-coupler, of a train pipe connector, having a casing mounted for vertical sliding and horizontal swinging movements upon the lower end of the knuckle-pin of the car-coupler, a spring for holding the casing toward the car-coupler body, a port carrying and hose-pipe connecting member mounted in the casing, a spring for holding said member projected, said member being provided with a fluid conducting channel therethrough, and a valve for controlling said channel, said valve being automatically opened as the two mating connecting members unite and closed when they separate.

5. The combination with a car-coupler, of a train pipe connector, including a carrying member mounted for vertical sliding and horizontal swinging movements upon the knuckle-pin of the car-coupler, a port carrying and collector member mounted in the carrying member, a spring for normally holding the last member projected, said port carrying and collector member being provided with a fluid conducting channel in communication with the port and the train pipe of the car, a valve mounted in said channel for controlling the passage of fluid therethrough, and means connected to the valve and the port carrying and collector member for opening the valve when two connectors mate and for closing the valve when they separate.

6. The combination with a car-coupler, of a train pipe connector, including a carrying member mounted for vertical sliding and horizontal swinging movements upon the knuckle-pin of the car coupler, a spring for holding the member toward the car-coupler, a port carrying and collector member slidably mounted in the carrying member, a spring for holding the last member projected, and means carried by the car-coupler and for engagement with a mating car-coupler for moving the carrying member against its spring to aline the port carrying and collecting member with a mating collector as the two car-couplers unite.

7. A train pipe connector for attachment to the knuckle-pin of a car-coupler, including a carrying member, a spring projected head having collecting portions and a chan-

nel therethrough having bleeding vents leading therefrom to the atmosphere, and an oscillatory valve for controlling the passage of fluid through the channel and having a port to each bleeding vent and for registration therewith when the valve is in closed position.

In testimony that I claim the foregoing as my own, I have hereto affixed by signature in the presence of two witnesses.

DANIEL B. McTAGGART.

Witnesses:

ED. M. CLARK,

I. E. WHITE.