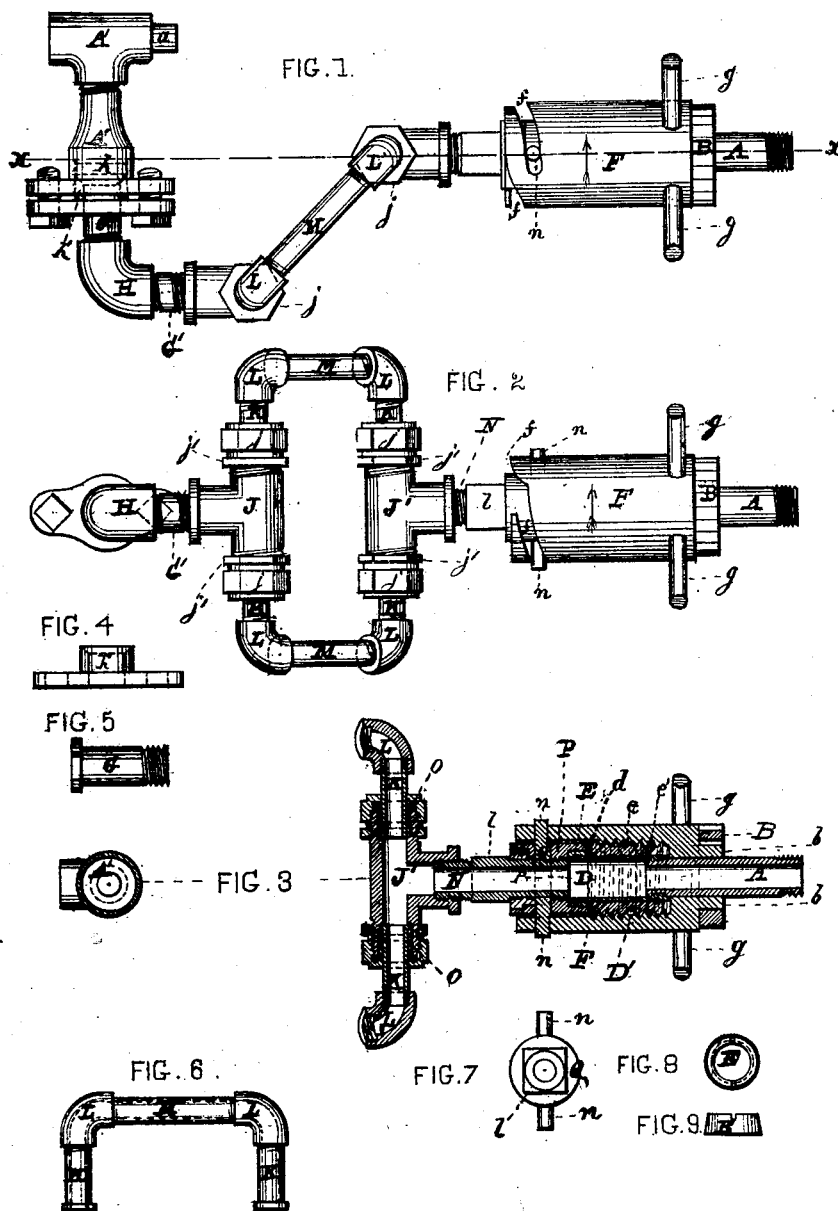


J. Conner,
Steam Coupling.
No. 110,114. Patented Dec. 13, 1870.



WITNESSES.

W. L. Imbry,
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JOSEPH CONNER, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 110,114, dated December 13, 1870.

IMPROVEMENT IN STEAM-PIPE COUPLINGS FOR RAILROAD-CARS.

The Schedule referred to in these Letters Patent and making part of the same.

I, JOSEPH CONNER, of the city of Philadelphia and State of Pennsylvania, have invented an Improved Coupling for Steam-Pipes in a Train of Cars, of which the following is a specification.

The object of my invention is such a coupling of the pipes at each end of the cars, and the front car with the tender, as to admit of a free lateral movement and a vertical movement of each car without straining the coupling; and also a perfect adaptation of the coupling of the cars together, and the front car to the tender.

The nature of the invention consists in making a rigid connection of a short pipe at the ends of each car, with the steam-pipe leading through it for warming the same, and connecting with one of these short pipes a series of pipes having a universal movement, by means of suitable joints provided with stuffing-boxes, and with the other pipe a coupling-socket adapted to the outer end of the combined pipe of universal movement.

The cars in the train are all brought together with the universal joint-pipes alike, either at the front or rear end, and, as they are coupled, the steam-couplings are connected, as hereinafter described.

I connect each section of the coupling with separate branches of the steam-pipe of the tender, which leads from the boiler, for the purpose of connecting either section of the coupling which may happen to be on the connecting end of the car with its counterpart. Each branch-pipe is provided with a suitable stop-cock.

To enable others skilled in the art to which my improvement appertains to make and use my invention, I will now give a detailed description thereof.

In the accompanying drawing, which makes a part of this specification—

Figure 1 is a top view of the coupling detached from the cars.

Figure 2 is a side elevation of the same.

Figure 3 is a vertical section at the line *xx* of fig. 1.

Figure 4 is an edge view of the gland *k*.

Figure 5 is a side view of the pipe *G*.

Figure 6 is a like view of one of the pipes *M*, elbows *L L*, and pipes *K K*, detached.

Figure 7 is a face view of the follower *Q* in connection with the pipe *N*.

Figures 8 and 9 are end and edge views of the nut *E*.

Like letters in all the figures indicate the same parts.

The coupling is made in two detachable parts, forming a combined coupling, as represented in the drawing, in which fig. 1 is a top view and fig. 2 a side elevation.

The short pipe *A* at one end of the coupling has a rigid connection with the steam-pipe at one end of the car, and the T-pipe *A'* at the other end of the

same, with the steam-pipe at the contiguous end of the next car in the train.

To give a firm connection of the pipe *A'*, the projection *a* fits into some fixed part of the car.

The pipe *A* is held securely by means of a jam-nut or otherwise.

To the inner end of the pipe *A* one end of the tube *D* has a screw-connection, as shown in fig. 3. On the other end of the tube there is a nut, *E*, seen in detail in figs. 8 and 9, which bears upon the washer *d*, that is seated on the end of the tube *D'*, which surrounds the tube *D*.

The said tube *D'* has a left-hand thread, *e*, on its periphery, which connects with the thread *e'* on the inner surface of the hollow cylinder *F*, which has at its outer end right-hand inclined slots, *ff*, so that as the said cylinder is turned in the direction of the arrow, by means of its radial arms *ggg*, when connecting-pins, with which the other section of the coupling device is provided, are brought into said slots *ff*, as hereinafter described, the slots and the screw-thread form a combined action in drawing the parts together. A pawl then falls into connection with the ratchet-wheel *B* on the hub *b* of the cylinder *F*, and secures the coupling of the two sections.

The screw-threads *e* and *e'* of the cylinder *F* and tube *D'* being of much less pitch than that of the incline slots *ff*, a combined leverage is obtained, which is the object in forming a screw-connection between the cylinder and tube.

The T-pipe *A'* of the other section of the coupling is enlarged at its outer end, and is constructed with a stuffing-box, *h*, to allow of the free turning of the short pipe *G* in the gland *k*, and thus admitting of the free up-and-down movement of the cars.

The gland *k* is seen detached in fig. 4, and the pipe *G* in fig. 5.

To the said pipe *G* is attached the elbow *H* and horizontal pipe *G'*.

The projection *a* of the pipe *A'* serves as a connection with a fixed part of the car, to prevent a twisting around of the pipe.

The remainder of this section is composed of the T-pipes *J* and *J'*, short pipes *K K K K*, connected therewith by the parts *jjjj*, and jam-nuts *jjjj*, the elbows *L L L L*, and intermediate pipes *M M*, and the horizontal pipe *N* and parts attached to the same.

There are stuffing-boxes *OO* in the nuts *jj* and the ends of the T-pipes *J J'*, which admit of the free horizontal movement of the said T-pipes *J J'*, to provide for any lateral movement of the cars.

Two of the pipes *K*, connected with corresponding ends of the T-pipes *J J'*, and the intermediate joint *M* between said pipes *K*, are shown detached in fig. 6.

The pipe *N* is provided with a square part, *l*, to fit

in a fixed part of the car to steady the end of the section.

The pipe N has a collar, *m*, between which and the nut P there is a follower, Q, seen in detail in fig. 4, that is provided with pins *n n*, which enter the inclined slots *ff* of the cylinder F, above described, when the two sections are brought together.

By turning the cylinder in the direction of the arrow, the said pins are advanced in the inclined slots and draw the pipe N and parts in connection forward until the socket *p* in the forward end of the nut P, above described, is brought into connection with the nut E on the end of the tube D, the socket and nut being slightly conical to admit of their free connection.

As the cylinder F is turned around, its left-handed screw-connection with the tube D' combines with the inclined slots *ff* in drawing the two sections of the coupling together. The reverse movement of the cylinder F, in uncoupling the device, unscrews the cylinder from the tube D' back to the point from which the coupling operation took it, ready for the next coupling of the cars.

The coupling, by its universal joints, is adapted to the coupling of the cars by the various devices in use, the straightening up of the middle joints, lengthening the coupling, and bringing them on an angle, as seen in fig. 2, shortening the same.

The coupling above described may be used for the passage through the cars of either steam, air, or water for the various purposes to which they may be applied.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the pipe A, tubes D D', and hollow cylinder F, having inclined grooves *ff*, the said parts being constructed and arranged in relation to each other, substantially in the manner and for the purpose above described.

2. The connection of the cylinder F with the tube D' by means of male and female screws, which run in an opposite direction to the incline slots *ff* of the cylinder, whereby a combined leverage is obtained in coupling the cars, substantially as described.

3. The combination of the hollow nut P with the pipe N, arranged and operating in relation to the conical nut E on the outer end of the tube D, as above specified.

4. The combination of the follower Q, having pins *n n*, with the pipe M, arranged and operating in relation to the inclines *ff* of the cylinder F, substantially as and for the purpose above set forth.

5. In combination with pipes A and N, tubes D and D', cylinder F, and follower Q, the pipe A' and intermediate hollow links, constructed and arranged as and for the purpose above described.

In testimony that the above is my invention, I have hereunto set my hand and affixed my seal this 21st day of October, 1870.

JOSEPH CONNER. [L. s.]

Witnesses:

THOMPSON CLYDE.
STEPHEN USTICK.