

(No Model.)

J. EMERSON.
PIPE COUPLING FOR RAILWAY CARS.

No. 443.934.

Patented Dec. 30, 1890.

Fig. 1.

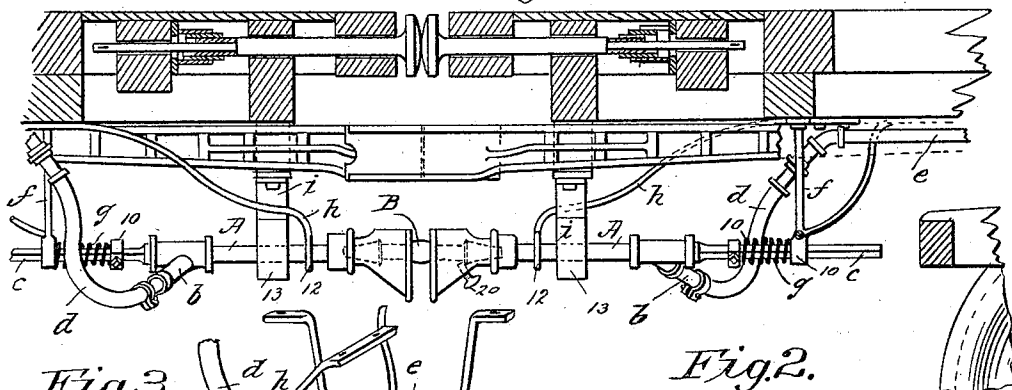


Fig. 2.

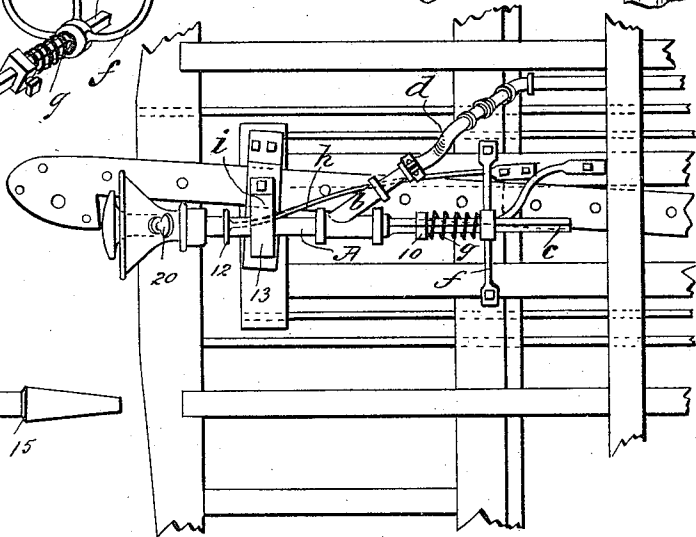


Fig. 3.

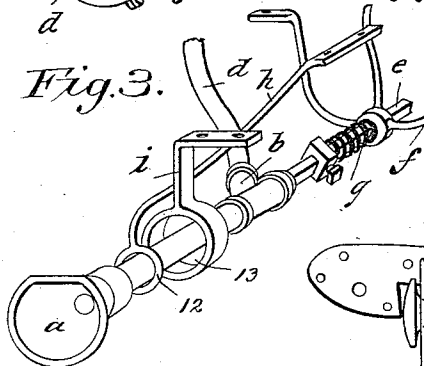


Fig. 4.

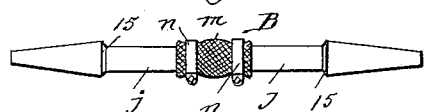


Fig.5.

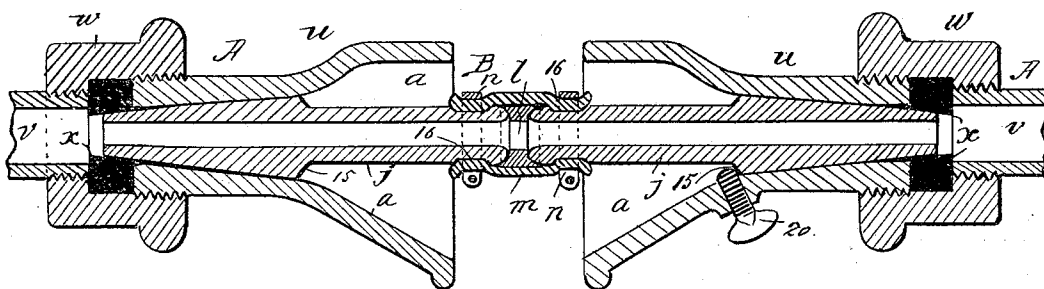


Fig. 6.



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PIPE-COUPLING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 443,934, dated December 30, 1890.

Application filed May 2, 1890. Serial No. 350,261. (No model.)

To all whom it may concern:

Be it known that I, JAMES EMERSON, a citizen of the United States, residing at Willimansett, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Automatic Pipe-Couplings for Railway-Cars, of which the following is a specification.

This invention relates to an automatic coupling for the pipes of railway-cars, whether such pipes be the conduits of air or other fluid for operating brakes, or of steam or hot water for warming purposes, or for other purposes.

The object of the invention is to provide a coupling of the character indicated which, while in construction is of the utmost simplicity, possesses as well the utmost efficiency in action at all times and under all conditions as presented under various circumstances.

The invention consists in the construction and combination of parts, all substantially as will hereinafter more fully appear, and be set forth in the claims.

Reference is to be had to the accompanying drawings, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a vertical longitudinal section and partial elevation showing the present improved coupling applied on the adjoined ends of two cars, which car ends are equipped, as usual, with buffers and car-couplings. Fig. 2 is a plan view of the bottom of one extremity of a car and the couplings thereon. Fig. 3 is a perspective view of one of the pipe-couplings. Fig. 4 is a side view of tubular parts embodied in the coupling. Fig. 5 is an enlarged central longitudinal section of two heads coupled. Fig. 6 is an end view of a detail part to be hereinafter referred to.

Each "half-coupling" consists of the coupling-bar A, formed tubular as to a portion of its length, and said tubular portion is open at its forward end or head and terminates in the outwardly-flaring or funnel-shaped mouth *a*. The rearward extent of the tubular portion of the bar A is to or just beyond the branch member *b*, to which one end of the flexible hose-section *d* is connected, the other end thereof being connected to the pipe *e*,

running longitudinally under the car, for the steam, hot water, or other fluid, and behind or inside of said tubular portion the bar is attenuated, as at *c*, and is in part suspended by the hanger *f*, which has an eye or aperture through which the rear portion of the coupling-bar is passed and in which it is capable of an endwise movement. A shoulder 10 is provided on the said part *c* of the coupling-bar, and interposed between same and the hanger is a spiral spring *g*, which acts to normally maintain the coupling-bar in its forward disposition. The said bar is further sustained by the spring-supporting arm *h*, which is by its rear end secured on a stationary under part of the car-body, and thence extends forwardly and downwardly more or less, as shown, and by the eye-formed end 12 loosely encircles the bar. Toward its forward end the said coupling-bar is also encircled by the hoop-shaped extremity 13 of a hanger *i*, also rigidly secured on an under part of the car-body, said encircling extremity having a diameter somewhat greater than that of the coupling-bar. The coupling-bar is therefore capable, first, of a bodily endwise motion on pressure at its front end and against the spring *g*, it then sliding freely with a bearing through the apertured extremities of the rigid hanger *f* and the pending spring-support *h*, and, secondly, of a swinging motion either upwardly or downwardly or toward either side, the forward end of the bar having the greatest extent of movement, swinging from its contact with the extremity of hanger *f* as its center of motion. The said spring-support *h* is so arranged and adjusted that when under no stress except that imparted by the weight of the coupling-bar its supporting extremity will be in the normal supporting position for said bar. The bar is often at times of coupling swung more or less out of its axial alignment, as it is permitted to be by the swinging of the said support *h* against its spring reaction; but it is always when uncoupled by the said spring reaction returned to the normal position coincident with a given line in or approximately in which the coupling-bars of all the cars are maintained.

The hanger *i*, having the hoop-shaped extremity rigidly supported on the under part

of the car-body, (the encircling extremity having a diameter somewhat greater than that of the coupling-bar at the portion encircled thereby,) serves as a means to prevent any undue swinging of the coupling-bar transversely of its axis from any cause, and should, when the coupling-bar is disconnected from its union with one on another car, the weight of the forward end of the coupling-bar cause the same to sag, as might occur on a diminution of the resiliency of the spring-hanger *h*, the coupling-bar will still be by said guard-support maintained in a practical working position.

The union between two of the coupling-heads is made by the interposition between them of an essentially tubular coupling member *B*, adapted by its ends to be held under compression and with a close fit in the flaring walls of both heads and by its end-to-end passage to form a continuation of the passage from the one coupling-bar to the other. As particularly shown, said coupling member comprises two axially-aligned metallic tubular sections *j j*, having their farthest extremities tapered to peripherally fit for a greater or less extent the tapering walls of the mouth in the head of each coupling-bar, and back from its outer end each section is necked down to form the shoulder 15. The inner ends of said sections are approached and just back from said ends are peripherally depressed, as at 16. A thimble *l*, of brass or other suitable metal or material, is interposed between the approached ends of the sections *j j*. The ends of the thimble are reamed out to form seats in which the chamfered or rounded ends of the said sections firmly rest, and the sections are capable of a swinging movement relative to their common axial line without being removed from the said thimble-seats, there being between the said thimble and the section ends a close yet free rocking or rolling bearing. A flexible sleeve *m* incloses the said thimble and also extends to overlies the peripherally-depressed extremities of the said sections *j*, and are thereon securely bound by the encircling straps *n n*.

In practice the coupling member *B*, formed as described, is entered and permanently confined by its one end in the mouth of one of the coupling-heads, being there confined by the end of the set-screw 20, which passes laterally through the wall of the head, engaging with the shoulder on the one section of said member, as indicated in the drawings. The union of the two sections of the coupling member, hereinabove described, is such that the same is to all intents and purposes and so far as such is desirable a rigid member, and yet it is capable of deflection with respect to the one member relatively to the other, as becomes necessary to accommodate various circumstances in the union of the coupling-bars on two cars.

The orifice at the extremity of the head on one car is of such area as to comprise all va-

riations in the position of the free end of the coupling member supported in the manner indicated on the other coupling-bar.

Each coupling-bar is, under the action of its spring, forwardly projected considerably beyond the position occupied thereby when two cars are coupled. As the two cars approach, before the coupling thereof for draft is effected, the tapered end of the coupling member carried on one coupling-bar enters and bears peripherally on the mouth-wall of the other, and by the time that the coupling for draft is effected both coupling-bars have been rearwardly forced, so that the reaction of their springs *g* is exerted to force the tapered ends of the coupling member into the throats of the coupling-bars, or the said throat-walls hard against and with a peripheral bearing upon said member extremities.

As seen, the free end of the coupling member carried on one of the coupling-bars will readily find and enter the tapered mouth of the coupling-bar on the next head. There are no latching or gripping parts in the coupling, and whenever the draft-couplings for the car are disconnected and the cars separate the pipe-coupling engagement is broken.

A construction of the coupling-bar *A* not hereinbefore mentioned is shown in the section, Fig. 5, wherein the coupling-bar is shown as formed in the forward and rear sections *u* and *v* and the intermediate and uniting section *w*. The said intermediate and uniting section has an opening axially through it, the extremities of which are screw-threaded to receive the threaded ends of the coupling-bar sections *u v*. There is a space between the ends of the said sections *u v*, in which is interposed under longitudinal compression a ring *x*, of compressible material, which has a considerable bulk. The extremities of the coupling member *B* at the time of coupling are projected within said rings in the pair of coupling-heads and receive the impingement peripherally thereon of the inner peripheral surface of said rings, thereby doubly insuring the effectiveness of the coupling union of two coupling-bars. Should the said compressible ring become internally worn, by giving one or the other of the coupling-bar sections *u v* one or more revolutions the ring will be so endwise compressed that its opening will be properly contracted.

What I claim as my invention is—

1. In an automatic pipe-coupling for railway-cars, a pair of flaring-mouthed coupling-bars, a coupling member for the union thereof, consisting of two axially-aligned tubular metallic sections which are by their most separated ends of tapering or conical form to closely fit the mouth-walls of the coupling-bars and having their other ends approached, an interposed metallic thimble, on the opposite ends of which the said approached section ends have a rocking or rolling bearing, and a flexible sleeve overlying said approached section extremities, for the purpose set forth.

2. In an automatic pipe-coupling for railway-cars, a pair of flaring-mouthed coupling-bars, a coupling member for the union thereof, consisting of two axially-aligned tubular metallic sections by their most separated ends externally of tapering or conical form to closely fit the mouth-walls of the coupling-bars, and having their approached extremities provided with the peripheral depressions 16 16, the metallic thimble on the opposite ends of which said section ends having a rocking or rolling bearing, the flexible sleeve overlying said approached section-extremities, and the straps encircling the end portions of said sleeve and binding closely upon said peripherally-depressed portions of the sections, substantially as and for the purpose described.

3. In an automatic pipe-coupling for railway-cars, a metallic coupling-bar provided at its forward end with an outwardly-flaring mouth, which is rearwardly continued in a longitudinal passage adapted at a rear portion of the coupling-bar to be in communication with the longitudinal conduit of the car, and the said mouth having formed therein an annular depression, and having therein an annular compressible packing-ring the inner periphery of which conduces to form a portion of the wall of said mouth, combined with a tubular coupling member having its ex-

tremities externally of conical or tapered form, whereby the said coupling member may closely fit both the metallic surfaces and the inner peripheries of the rings forming the mouths, as described, of two coupling-bars, and to form a continuation of and communication between the longitudinal passages thereof, and said coupling member being intermediately jointed, all substantially as and for the purpose set forth.

4. In an automatic pipe-coupling for railway-cars, a coupling-bar having an outwardly-flaring mouth and throat and formed of the forward and rearward sections *u v*, having the longitudinal passages through them and the passage in the former being of tapered form, the intermediate annular uniting-section *w*, with which the parts *u* and *v* have a screw-thread engagement, there being between the ends of said sections *u v* and within the one *w* a chamber with shoulders at the ends thereof formed by the approached ends of said forward and rearward sections, and a compressible ring within said uniting-section and confined between the ends of the other sections, substantially as and for the purpose set forth.

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Witnesses:

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