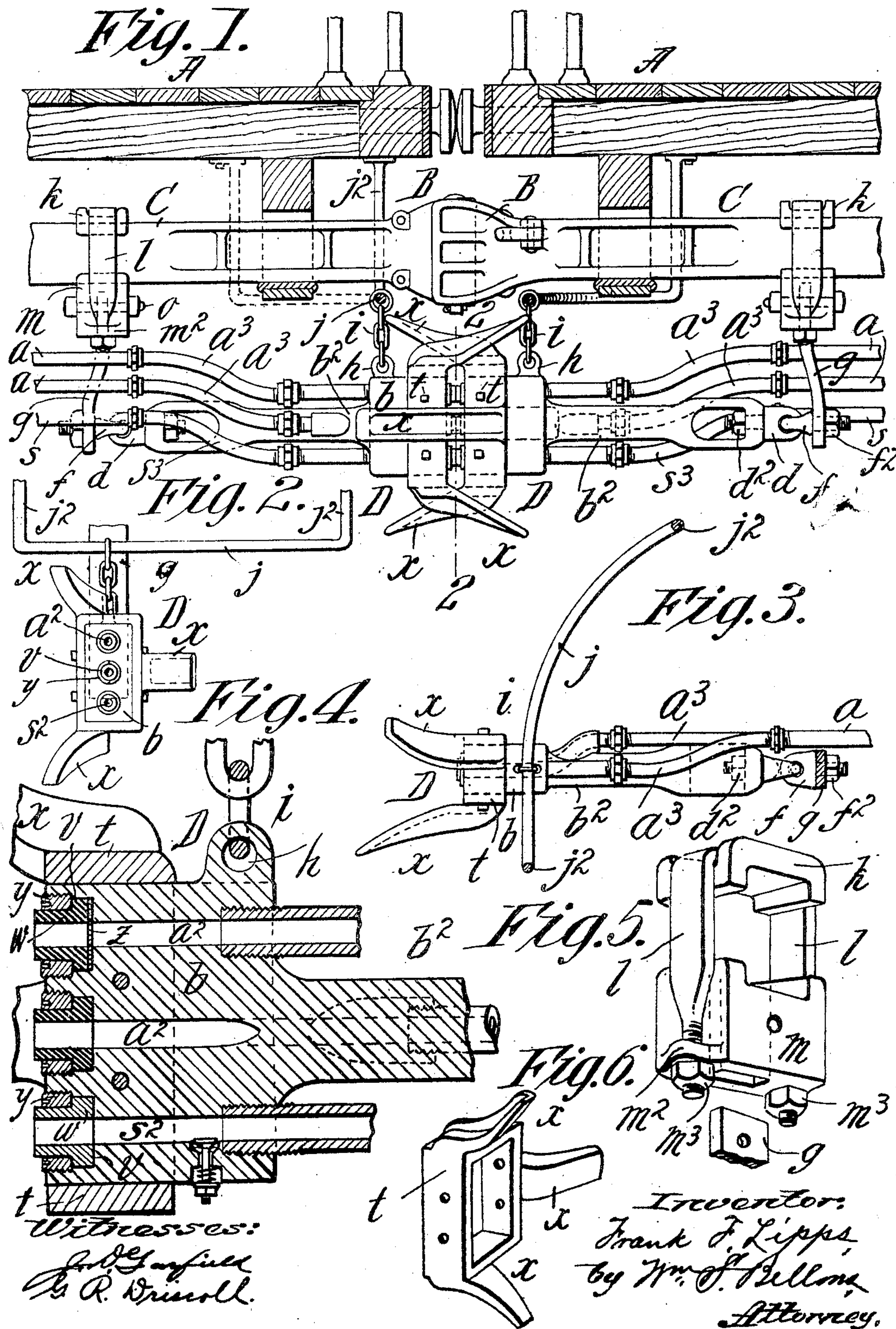


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AUTOMATIC COUPLING FOR STEAM, AIR, OR OTHER PIPES OF RAILWAY CARS.

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UNITED STATES PATENT OFFICE.

FRANK F. LIPPS, OF HOLYOKE, MASSACHUSETTS.

AUTOMATIC COUPLING FOR STEAM, AIR, OR OTHER PIPES OF RAILWAY-CARS.

No. 798,044.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK F. LIPPS, a citizen of the United States of America, and a resident of Holyoke, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Automatic Couplings for Steam, Air, or other Pipes of Railway-Cars, of which the following is a full, clear, and exact description.

This invention relates to automatic couplings for the steam and air pipes of railway-cars of the general character shown and described in Letters Patent of the United States granted to me April 7, 1903, No. 724,720.

The object of the invention is to produce couplings for the longitudinally-ranging pipes of the cars of the simplest possible character and construction with correspondingly increased capability for reliable action and lessened liability to derangement.

Another object is to so construct the pipe-coupler heads and their bars and conjoint appurtenances as to make it practicable and entirely satisfactory to bodily carry the pipe-couplings in suspension by and closely under the car-couplings and draw-bars of the description now in most common use and without in any way reconstructing or encumbering the car-couplings.

A further object is to make the pipe-coupling heads of a form and construction which is practicable, of cheap and easy manufacture and great durability, and with provision for the retention, removal, and replacement of annular externally-flanged fittings which constitute the orifices of the steam and air conduits and which in the coupling come together with and remain in more or less compression.

A further object is to construct a pipe-coupling head having a central or body portion which has no wear—for instance, of cast-iron—and to make a portion surrounding the body and which is equipped with the projections or horns for causing one of the pipe-coupling heads to be longitudinally alined with another similar head of a good-wearing metal—such, for instance, as a forging or a malleable-iron casting.

The invention consists in the combination and arrangement of parts and the construction of certain of the parts, all substantially as hereinafter fully described, and set forth in the claims.

The improved couplings for the steam and air pipes of railway-cars are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation showing the couplings for the pipes in coupled relations and in their arrangement relatively to the car-platforms and the draw-bars and couplings of adjoined cars. Fig. 2 is a front end elevation of one of the pipe-couplings—that is, as seen beyond the line 2 2, Fig. 1. Fig. 3 is a plan view of one of the pipe-couplings. Fig. 4 is a central longitudinal sectional view of one of the pipe-coupling heads. Fig. 5 is a perspective view of an appliance pertaining to the improved pipe-coupling and which is for removable attachment on the car-coupling draw-bar. Fig. 6 is a perspective view of a sectionally-made portion of the pipe-coupling head.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A A represent the platform portion of steam-railway cars, of which B B are the car-couplings carried at the ends of the draw-bars C C, and *s a a* represent a plurality of rigid pipes understood as carried and ranging longitudinally under the car-body, the ones *s s*, for instance, being the steam-pipes, while the ones *a a* are the pipes for the conveyance of air used for operating the air-brakes and the whistle.

D D represent the automatic pipe-couplings, which are made counterparts one of another for the ends of the cars. Each pipe-coupling comprises a head *b* and a horizontal longitudinally-extending body or bar *b²*, the head or bar, or both, having forwardly-opening fluid-passages *a² a²* and *s² s²* therethrough, coupled into which are pipe-sections *a³ a³* and *s³*, which as to the whole or portions of their length are of flexible character, and these sections are connected with the ends of the fluid-pipes of the car which terminate in the rear of the car-couplers.

The pipe-coupling body has at its rear end an eyebolt *d*, affixed by the nut *d²*, and connection of the eyebolt *d* is made with an eyebolt *f*, which by nut *f²* is affixed in the position shown to the lower end of the bar-spring *g*, which is carried as a depending equipment of the car-body, and preferably, strictly speaking, as an appliance to the car-coupling draw-bar C, and the coupling-body is therefore at its rear or inner end supported in such

a manner that it may move substantially bodily in unison with the draw-bar, maintained always at the same level, and be capable of a transverse swinging movement on a horizontal plane from the joint or shackled connection at the interlocking point of the eyebolts as the center of motion.

The pipe-coupling is forwardly supported by having its head formed with an upwardly-extended eye-lug h , in which is engaged a link of a short heavy chain i , while the upper link or eye of the chain has a shiftable or transversely-running engagement with a runner rod or member j , which, as shown in the plan view Fig. 3, is of arc form, with its general direction transversely of and under the car-platform, and the said runner member j forms the lower portion of a frame, the uprights $j^2 j^2$ of which have connection, as shown, at and with the under side of the car-platform.

As specifically shown, the appliance provided to the draw-bar for supporting the depending bar-spring is in the form of a clip, comprising the saddle-block k , the strap l , and the under block m , having the vertically-perforated ear-lugs m^2 , through which the screw-threaded extremities of the strap pass, the strap extremities receiving thereon below the ear-lugs the supporting and confining nuts m^3 , and the under block is made with a downwardly-opening recess in which is fitted and secured by a cross pin or bolt o the upper end portion of the bar-spring g .

It will be appreciated that the pipe-coupling may have motions fore and aft in unison with the car-coupling and also more or less fore-and-aft motion independently of the motion of the car-coupling, the longitudinal motion in the rearward direction being permitted by the flexible connection and support for the forward portion of the pipe-coupling, and such longitudinal movement as the pipe-coupling has independently of the car-coupler can be against or with the reaction of the bar-spring. The horizontal transverse motion which the pipe-coupling has imparted thereto by the horns $x x$, having the form and arrangement and manner of operation substantially as described in my aforementioned patent to bring the pair of heads into proper alinement for the register of the forwardly-open fluid-passages therethrough, is permitted by the capabilities for such end found in the forward support of the character described and as shown for the coupler.

As preferably constructed the head and body of the pipe-couplers are made of cast-iron, with the passages therethrough, as shown and described, the head being in the design shown cross-sectionally rectangular, and the further section or portion is separately made, advantageously as a forging malleable-iron casting or other wear-withstanding metal in the form

of a frame t with the horns x integral therewith, this frame-like section being shrunk onto the head and additionally secured by cross-bolts or keys.

After protracted use in case the horns may become broken or badly battered the shrunk-on section may be removed and replaced by new ones and of course without the necessity of discarding the entire heads.

The forwardly-opening passages in the pipe-coupling heads have, as represented in Fig. 4, circularly-rabbeted orifices v , in which annular externally-flanged fittings w are located with the flanges sunk within the orifices and having their unflanged portions protruding beyond the plane of the front face of the coupler-head, and ring-nuts y are screw-engaged into the rabbeted orifices and confine the flanges of said fitting against the seats therefor.

As fittings or packings for the orifices of the air-passages compressible rubber may be the preferred material, but for the terminals of the steam-passages a metal, such as soft brass, is preferably used.

At times when the pipe-coupling is not to be in a coupled relation with a similar pipe-coupling of an adjoining car the coupler-head and body b^2 may be swung considerably transversely, so that the head and horns are disposed in an out-of-the-way position closely under the steps at the side of the car-platform.

Seated, as shown, in the rabbeted orifice of any or all of the forwardly-opening fluid-passages through the pipe-coupling head is a disk of gauze z to intercept any dirt or dust which may come thereto through the steam and air pipe of the car, and when the packings are removed or replaced these gauze-sections may be temporarily removed for clearing out any accumulations which may be found at the rear thereof.

I claim—

1. The combination with a fluid-conduit of a railway-car, and a depending bar-spring carried by the car, of a pipe-coupling head, having a forwardly-opening passage there-through, and having a longitudinally-extending body, and with the passage through which said pipe is connected, means for connecting said pipe-coupling body at its rear with the free lower portion of said spring, and a flexible support carried by the car, and with which the forward portion of the pipe-coupler is connected.

2. The combination with a fluid-conduit of a railway-car, and a depending bar-spring carried by the car, of a pipe-coupling head with a longitudinally-extending body, and having a passage endwise therethrough, a flexible pipe-section connecting the fluid-conduit with the rear end of said passage, a connection between the rear portion of the pipe-coupler and

said spring, and a flexible support carried by the car, and with which the forward portion of the pipe-coupler has a supporting connection.

3. The combination with a fluid-conduit of a railway-car, and a depending bar-spring carried by the car, of a pipe-coupling comprising a horn-provided head and a longitudinally-extending body, and having a passage therethrough forwardly opening and with the rear of which the fluid-conduit is connected, a shackle connecting the rear end of the coupling-body with the free lower end of said bar-spring, a supporting-fixture depending below the car-body, and having a horizontal and substantially transversely disposed member, and a connection secured to a forward part of the pipe-coupling, and having a laterally-shiftable support on said member.

4. The combination with a fluid-conduit of a railway-car, and a depending bar-spring carried by the car, of a pipe-coupling having a forwardly-opened passage extending through its body and head, and having the rear end portion of its body pivotally connected with the free lower end of said bar-spring for transversely-swinging movement on a horizontal plane, a frame supported by and depending below the body of the car forward of said spring, and comprising a transverse arc-shaped horizontal runner member, and a chain or like flexible support connected to a forward portion of the coupling, and having a shiftable engagement transversely on the aforesaid runner member.

5. The combination with the body of a railway-car, a fluid-conduit thereof, and the car-coupling draw-bar carrying a rearwardly-yielding spring member, of a pipe-coupler comprising a horn-provided head, and a horizontal longitudinal body, and having a forwardly-opened passage therethrough in connection with said fluid-conduit, the coupling-body being rearwardly shackled to said spring member for transversely swinging on a horizontal plane, and a fixture depending below the car-body on which the forward portion of the pipe-coupling is supported for transversely-shifting movements.

6. The combination with the body of a railway-car, a fluid-conduit thereof, a car-coupling draw-bar carrying a rearwardly-yielding spring member, and a forwardly-located depending frame having an arc-shaped horizontal and generally transversely-arranged lower runner member, of the pipe-coupling comprising a horn-provided head, and a horizontal longitudinal body, and having a forwardly-opened fluid-passage therethrough, connected with the said fluid-conduit, and said pipe-coupling being shackled to said spring member for a horizontal swinging motion, and a chain, having a portion thereof slidably engaged with said arc-shaped runner member,

and supporting the forward portion of the pipe-coupling.

7. The combination with the body of a railway-car, a horizontal longitudinally-ranging fluid-conduit, a car-coupling draw-bar, and a forwardly-located depending frame having a horizontal transversely-arranged lower member, of a block under the draw-bar, a confining-strap therefor, and a bar-spring secured to and extending below said block, and provided at its lower portion with an eye-provided member, the pipe-coupling comprising a head and horizontal longitudinally-extending body provided at its rear end with an eye-formed member interlocked with the spring-carried eye member, and having a forwardly-opened longitudinal passage therethrough, a flexible pipe-section connecting the rear end of said passage with the rigid fluid-conduit, and a flexible support connected with the forward end of the pipe-coupling and having a transversely-shiftable engagement with the lower member of said depending frame.

8. A pipe-coupling for cars having a head with a passage forwardly opening therethrough, and having a circularly-rabbeted orifice, the wall of which is screw-threaded, an annular externally-flanged connection-fitting composed of compressible material, having the flange thereof located within said orifice having its inner end backed directly against the solid base of the orifice, and having its unflanged forward portion projecting beyond the front face of the coupler-head, and a ring-nut screw-threading into said orifice and engaging the flange of said fitting.

9. A pipe-coupling for cars consisting of a metal head having one or more forwardly-opening fluid-passages therethrough, and a section constructed in the form of a frame, fitting and secured around said head, and provided with forwardly-projecting divergent horns for alining one pipe-coupling with a like horn-provided pipe-coupling.

10. In a pipe-coupling for cars a plurality of longitudinally-ranging rigid fluid-pipes, the car-body, the car-coupling draw-bar having the saddle-block, the strap and the under block provided with the vertical recess, a bar-spring having its upper end fitted and secured in said recess, and having at its lower end portion an eye-provided bolt and a confining-nut, the frame comprising the vertical members secured to and depending below the car-body, and the arc-formed horizontal member, the pipe-coupler comprising a horn-provided head and a longitudinally-ranging horizontal body having at its rear portion an affixed eyebolt interlocked with the spring-carried eyebolt, whereby the pipe-coupler is jointed to the spring for a rearwardly-yielding movement and a swinging motion horizontally, and said coupling having a plurality of forwardly-open-

ing passages, flexible pipe-sections, rearwardly connecting said passages respectively with the rigid fluid-pipes and a chain, having an eye member thereof shiftably engaged with the curved horizontal member of said frame, and having a suspension connection with a forward portion of the pipe-coupler.

Signed by me at Springfield, Massachusetts,
in presence of two subscribing witnesses.

FRANK F. LIPPS.

Witnesses:

WM. S. BELLOWS,
G. R. DRISCOLL.