

(No Model.)

2 Sheets—Sheet 1.

J. E. MARBLE.

AUTOMATIC COUPLING FOR STEAM AND AIR PIPES OF RAILWAY CARS.

No. 491,291.

Patented Feb. 7, 1893.

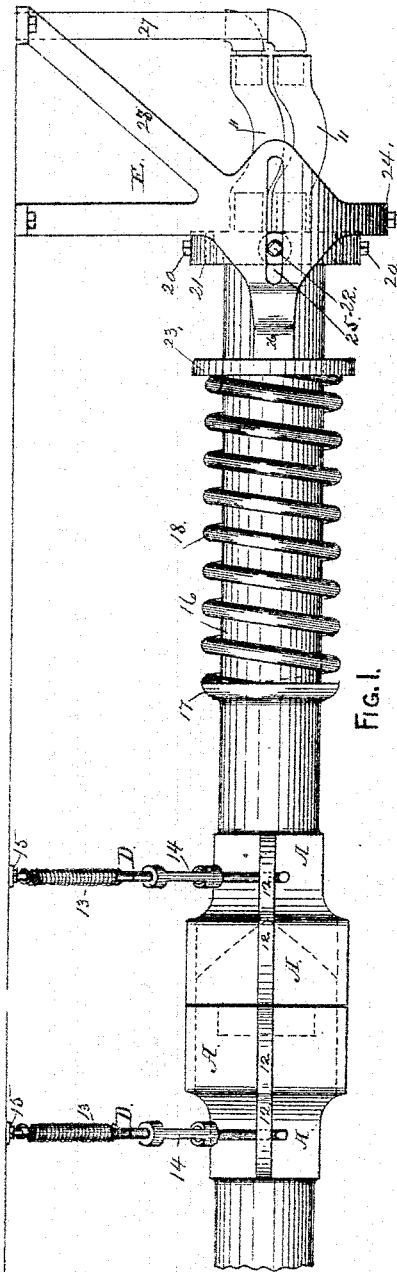


FIG. 1.

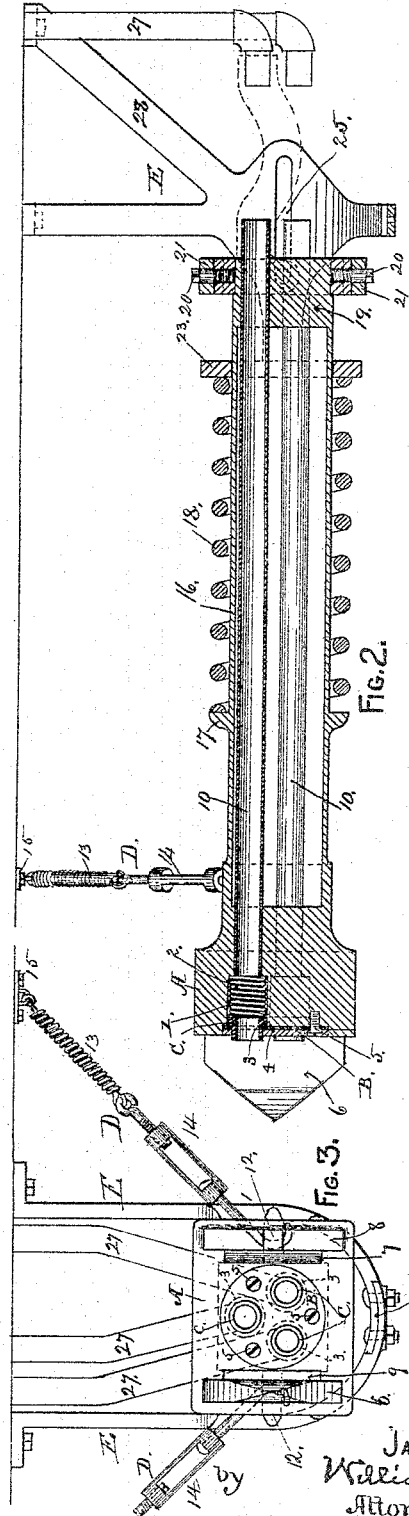


FIG. 2.

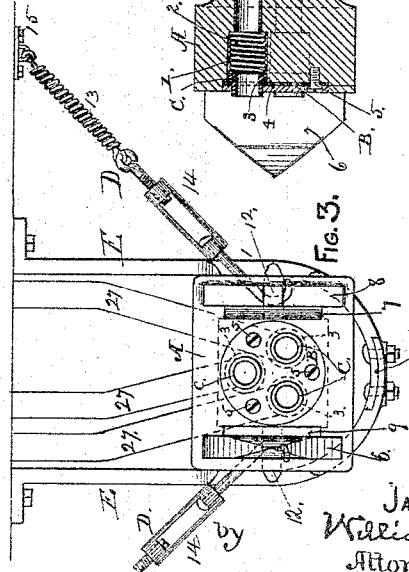


FIG. 3.

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(No Model.)

2 Sheets—Sheet 2.

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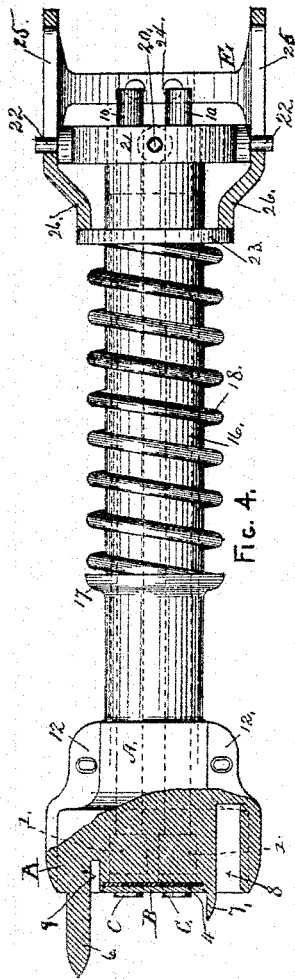


Fig. 4.

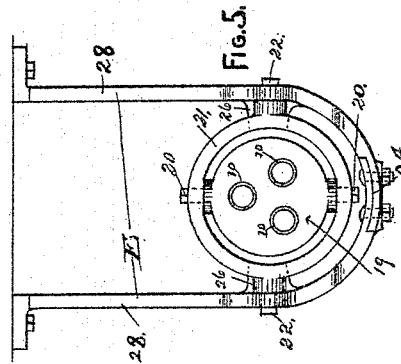


Fig. 5.

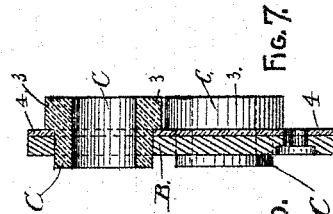


Fig. 6.

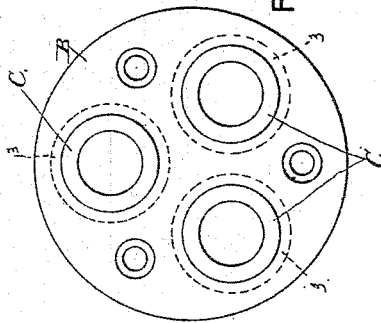


Fig. 7.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC COUPLING FOR STEAM AND AIR PIPES FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 491,291, dated February 7, 1893.

Application filed September 3, 1892. Serial No. 444,973. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. MARBLE, of the city and county of Albany, in the State of New York, have invented new and useful Improvements in Automatic Couplings for Steam and Air Pipes for Railway-Cars, of which the following is a specification.

This invention relates to couplings for pipes of railway cars, whereby steam-pipes, and steam and air pipes, can be automatically coupled together simultaneously with the coupling together of the cars.

In the accompanying drawings, which are herein referred to and form part of this specification, Figure 1 is a side elevation of one of my couplings, showing the head of a conjoining coupling connected thereto; Fig. 2 is a longitudinal section of my coupling; Fig. 3 is a front elevation; Fig. 4 is a plan view of my coupling with a part of the head broken away to show internal construction of the latter; Fig. 5 is a rear elevation of my coupling and the hanger for carrying the same; Fig. 6 is an enlarged and detached front elevation of the face-plate of my coupling; and Fig. 7 is a vertical section of the latter.

As represented in the drawings, A designates the head of my coupler, which is preferably made rectangular in form, and has in its outer end a removable face-plate, B, which is flush with the face of the head; said face-plate covers one or more chambers, 1, and each chamber contains a spring, 2, which bears against the inner face of an annulus, C, which protrudes beyond the outer face of the head A and is provided with a circumferential flange, 3, to limit the extent of such protrusion; preferably said annulus is made of an elastic material that will form a steam-tight joint when two of said annuluses are held in contact against the resistance of the springs 2. A gasket, 4 of rubber or other material suitable for forming air-tight joints, is interposed between the face-plate B and the inner face of the chamber of said head in which said face-plate is contained and said gasket forms a joint that will prevent steam or air from passing from one of the chambers 1 into another said gasket encircling each of said annuluses so as to prevent the escape of steam or air around the latter; the face-plate B is

secured in place by means of suitable screws or bolts, 5, whose outer ends should not protrude beyond the face of said face-plate. The outer end of the head A is provided with guide-tongues or tenons, 6 and 7, and with mortises, 8 and 9, the mortise 8, which is adapted to receive the tongue 6 of a conjoining head, is formed at the outer side of tongue 7 which is curved toward the center of the head for the purpose of guiding the tongue 6 of a conjoining head into said mortise; and the mortise 9, which is adapted to receive the tongue 7 of a conjoining head A, is formed at the base of the inner side of the tongue 6; the outer portion of the latter is tapered on both faces and edges to form a lance-shaped end which will facilitate the entrance of said tongue into the mortise 8 of a conjoining head A. From each of the chambers 1, a tube, 10, extends rearwardly and projects from the rearmost end of the coupling so as to receive a flexible tube, 11, which forms a connection with a pendent pipe which is a branch from a steam-pipe—or air-pipe or pipes—which forms a part of the system of pipes with which the rail way car is provided.

As shown in the drawings my coupling is provided with three pipes 10, one of which is appropriated to steam for supplying the steam-heating system of the train, another for connecting the compressed-air receiver with the air-brake system of the train, and the other for conveying compressed air to the signal-whistle when the train is to be stopped or started; but, when preferred, either one—or any two—of said pipes may be dispensed with, and the coupling can then be worked with the remaining pipe or pipes.

At each side of the head A a lateral flange, 12, is formed to receive the lower end of a pair of flexible suspenders, D, by which the outer end of my coupling is preferably suspended from the bottom of a car; each of said suspenders consists of a spring, 13, which connects with a turn-buckle, 14, and a staple, 15, attached to the bottom of a car; the hooked-end of said turn-buckle is fitted to engage in a hole in the corresponding flange 12, and by means of said turn-buckles the head A can be adjusted to a central position in respect to the end of a car and maintained at a required

height to correspond to the position of like heads of similar couplings, so that any number of cars that are similarly equipped can have their pipe-systems automatically coupled together by coupling the draw-bars of a train, provided said drawbars are hooked together to hold the cars of a train together closely and in an invariable manner. The flexible suspenders D will permit the couplings to sway sidewise sufficiently to permit the train to flex while it is passing around curves on a track.

A tubular extension, 16, is preferably provided for containing and protecting the pipes 10, and said extension can be integral with the head A—as shown in the drawings—or it may be a separate piece connected to said head; said extension is provided with a circumferential collar or flange, 17, which forms an abutment for one end of a spring, 18, which encircles said extension and presses the coupler outward for the purpose of keeping the heads of two couplings in close contact when coupled together. The rearmost end of the tubular extension is provided with a closure, 19, which is pierced for receiving the pipe or pipes 10; said closure is provided with oppositely located pivots, 20, to which a loosely-fitted ring, 21, is pivoted, and the latter is provided with oppositely-located trunnions, 22, which are arranged at right angles to the pivots 20; the ring 21, pivots 20, and trunnions 22 form a universal-joint for the rearmost end of my coupling, so as to leave the outer end of the latter free to be swung in any direction. The tubular extension 16 has a loosely-fitted collar, 23, encircling it, and said collar forms an abutment for the inner end of the spring 18.

A hanger, E, made in two separable parts which are connected together, as at 24, is secured to the bottom side of the car for the purpose of carrying the rearmost end of my coupling; the sides of said hanger are provided with oppositely-located slotted-openings, 25, for receiving the trunnions 22, so that the latter can have a sliding movement therein when the coupling is pushed inwardly, or a rocking movement when the coupling is swung up or down. The sides of said hanger are provided with longitudinally-extending arms, 26, which take against the collar 23 and afford support for the latter. Preferably the hanger E is provided with a brace, 28, which is arranged to resist a thrusting strain.

In practice the plane of the face of the head A should project slightly beyond the vertical plane of the engaging face of the hook of a car-coupler, so that when the cars are coupled together the heads A will be in contact, and the springs 18 being thereby compressed to hold the annuluses C closely in contact with the like parts of a conjoining head, and thereby a continuous system of pipes will be maintained from one end of a railway train to the opposite end. It should be understood that the pendent pipes 27 are part of systems of

pipes arranged within each car for conveying steam and compressed air through each car of a train, and that each pipe of said systems is provided with a shut-off cock or valve—which is preferably located within the car—so that, at the rearmost end of the last car of a train, communication through the pipes 10 may be closed at the rear end of a train, and thereby an escape of steam and compressed air through said pipes will be prevented.

My invention is operated in the following manner: When two cars are pushed together, as in coupling them together, the tongues 6 and 7 of the heads A will enter the mortises 8 and 9, respectively, of the conjoining heads, and thereby the annuluses C of the two couplings will be forced into close contact, and communication between the pipes 10 of the conjoining couplings will be thereby established; in effecting this conjunction, the springs 18 of the couplings will be compressed to hold the faces of said annuluses in sufficiently close contact to form steam or airtight joints between the faces which come into contact. The universal-joints at the rear end of my coupling will permit the latter to accommodate itself to any tortuous movements of the cars of a train.

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

1. In an automatic coupling for steam- and air-pipes which is held in contact with a like coupling by means of a car-coupler, the combination of a head, A, provided with a series of chambers, 1, each of which contains a spring, 2, a removable face-plate, B, which covers said chambers and is provided with a series of movable annuluses, C, arranged correspondingly to said chambers; the inner end of said annuluses being arranged to bear against a corresponding spring 2 and the outer end of the same projecting beyond the vertical plane of the end of said head, a gasket, 4, interposed between said face-plate and head so as to encircle each of said annuluses; the head A being provided with tongues, 6 and 7, and with mortises, 8 and 9, so arranged that the tongues of one head will engage with the corresponding mortises of a conjoining head of a like coupling, and a series of pipes, 10, leading rearwardly from said chambers, as and for the purpose herein specified.

2. In an automatic coupling for the steam and air pipes of railway-cars, the combination with a coupling-head, A, which is carried by flexible suspenders, D, which are adjustable; said suspenders consisting of a spring, 13, and a turn-buckle, 14, of pipes, 10, leading rearwardly from said head and inclosed in a tubular extension, 16, having a collar or flange, 17, a spring, 18, bearing against said collar, a loosely-fitted collar, 23, through which said extension slips loosely, a loosely-fitted ring, 21, pivoted to the inner end of said extension and provided with trunnions, 22, a hanger, E, fixed to the body of a car and provided with slotted openings, 25, for receiving the trun-

nions 22, and with arms, 26, fitted to take against the collar 23, as and for the purpose herein specified.

3. In a coupling for steam- or air-pipes for
5 railway-cars, the combination of a chambered head, a removable face-plate provided with spring-actuated annuluses fitted to move inwardly and outwardly in the chamber of said head, and a gasket interposed between said
10 head and face-plate so as to encircle each annulus; whereby steam or air is prevented from escaping around said annuluses and from passing from one chamber into another in the same head, substantially as herein
15 specified.

4. In a coupling for steam- or air-pipes for

railway-cars, the combination of a coupling-device having a head provided with means, substantially as described, for interlocking with—and forming steam-tight joints between 20 the openings of—a conjoining head of like construction; the inner end of said device having a universal-joint provided with oppositely-located trunnions, hangers provided with slotted openings for receiving said trun- 25 nions, and adjustable flexible-suspenders connected to the outer end of said device, as and for the purpose herein specified.

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