

J. E. MARBLE. COUPLING FOR STEAM PIPES OF RAILWAY CARS.

No. 498,520.

Patented May 30, 1893.

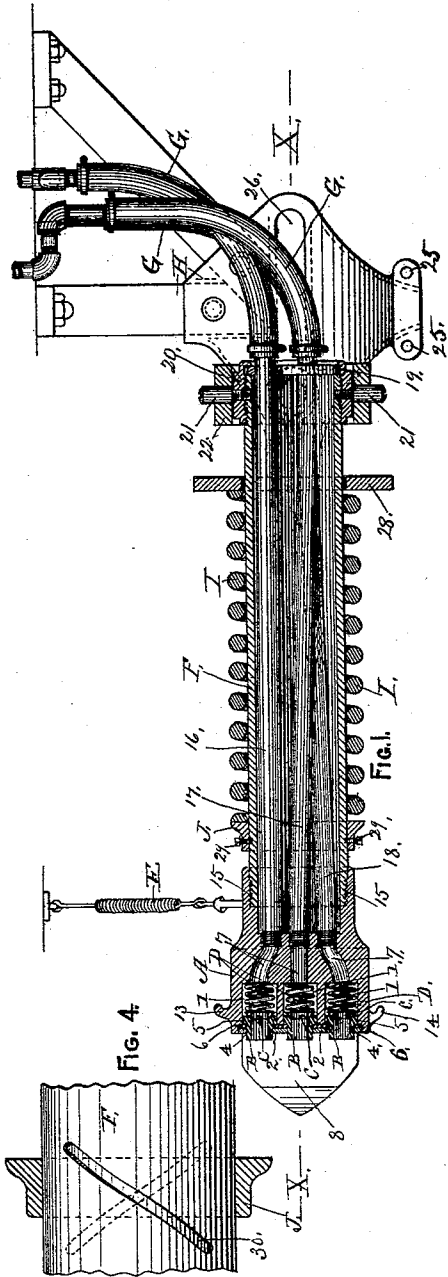


Fig. 1.

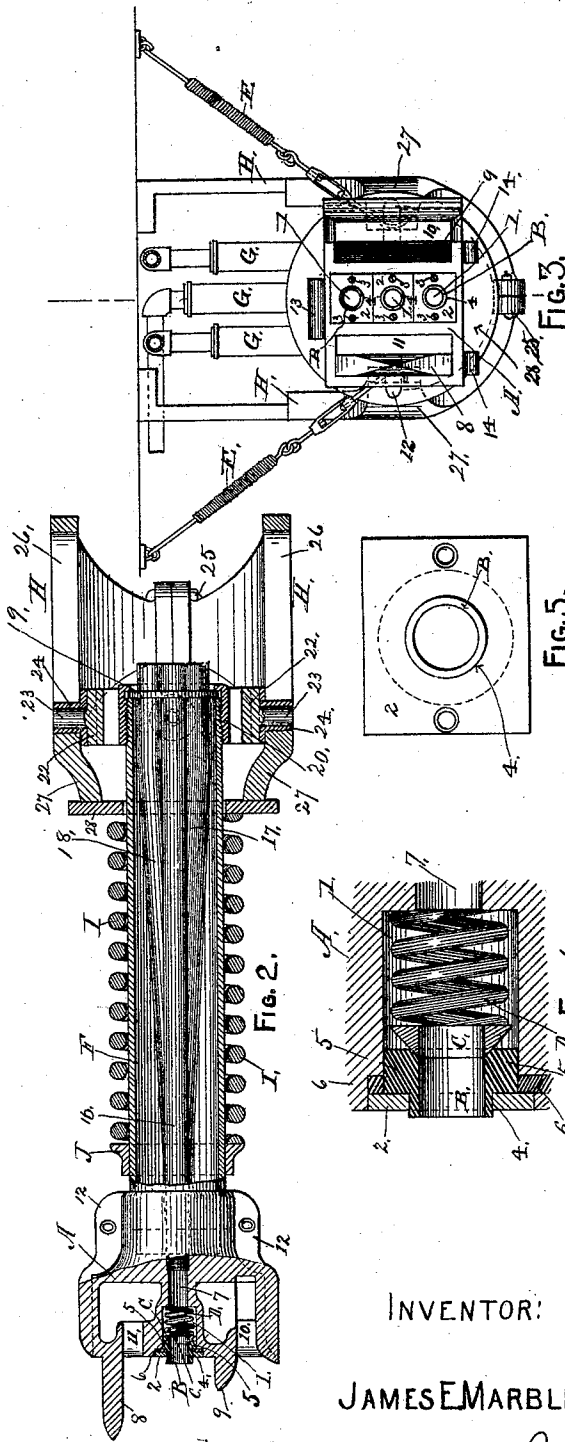


Fig. 2.

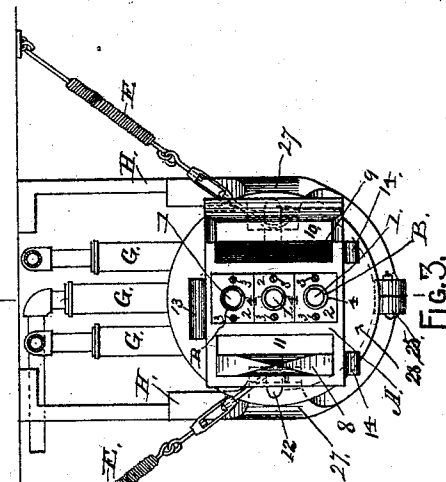


Fig. 3.

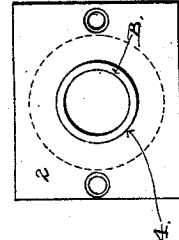


Fig. 4.

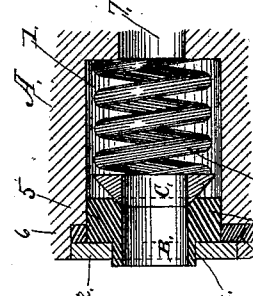


Fig. 5.

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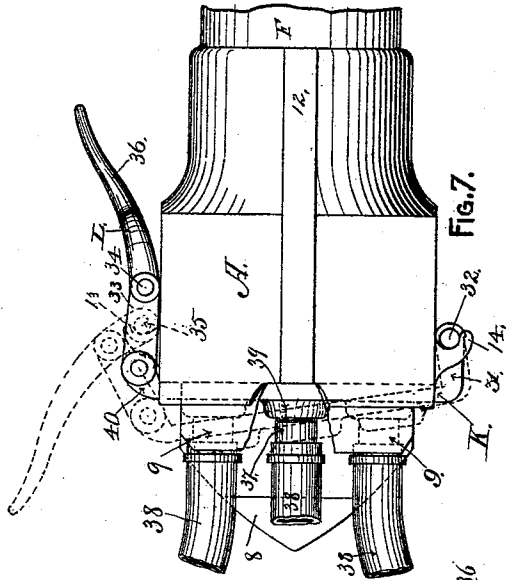


FIG. 7.

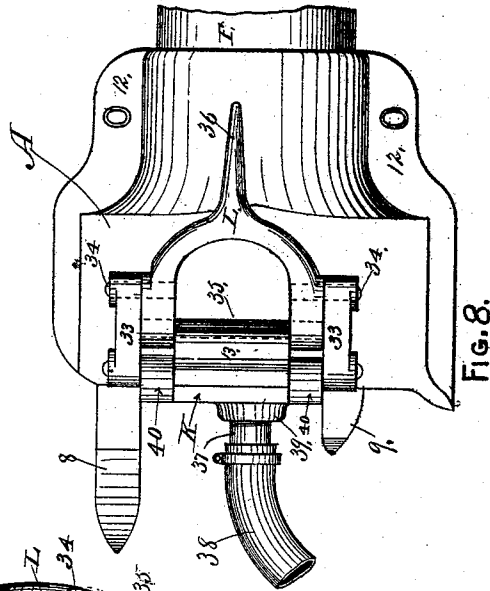


FIG. 8.

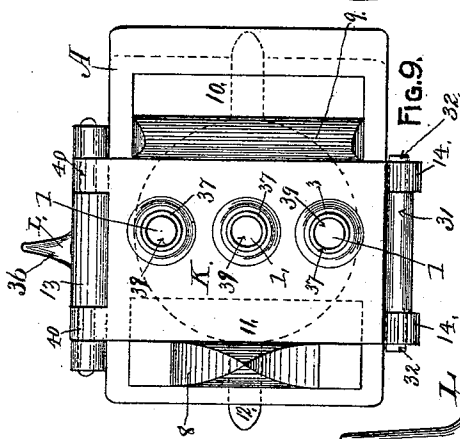


FIG. 9.

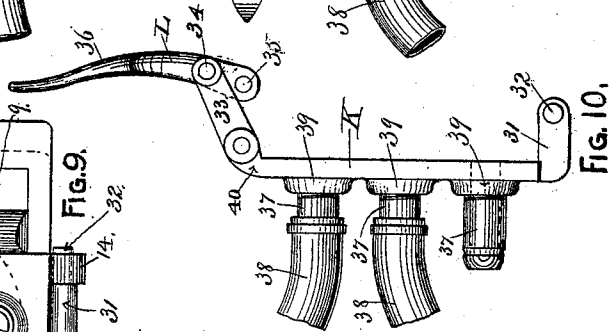


FIG. 10.

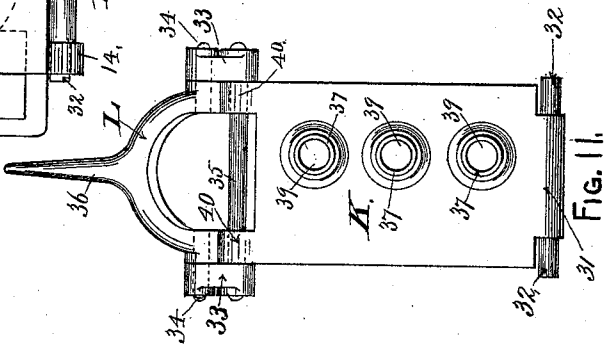


FIG. 11.

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UNITED STATES PATENT OFFICE.

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COUPLING FOR STEAM-PIPES OF RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 498,520, dated May 30, 1893.

Application filed November 29, 1892. Serial No. 453,512. (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
5 Improvements in Couplings for Steam-Pipes of Railway-Cars, of which the following is a full and exact description, reference being had to the accompanying drawings, which form part of this specification.

10 This invention relates to improvements on automatic couplings described in the specification forming part of Letters Patent of the United States, No. 491,291, granted me February 7, 1893; and the object of my present
15 invention is to remedy certain defects in the invention last referred to, and to provide means for effecting a connection of my automatic coupling with steam- and air-brake couplings of the common and well-known
20 type. This object I attain by the means illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of one of my improved couplings. Fig. 2 is a horizontal
25 section of Fig. 1 at the line, X X, with a portion of the head of the coupling shown in plan view. Fig. 3 is a front elevation of my coupling. Fig. 4 is an enlarged plan view of a portion of the tubular covering for the steam
30 and air-pipes, said covering showing the spiral grooves employed to regulate the compression of the spring used for keeping the head of the coupling pushed outward. Fig. 5 is an enlarged end elevation of one of the
35 removable plates for closing the chambers of the head. Fig. 6 is an enlarged longitudinal section of one of the chambers of the head, showing the annular gasket, expander, and spring. Figs. 7, 8, and 9, are respectively an
40 enlarged side elevation, plan view, and front elevation of the head of my coupling provided with means for connecting the common form of couplings thereto when required; and Figs.
45 10, and 11, are respectively a side elevation, and a front elevation of a detachable plate fitted to lock onto the head of my coupling, the same being provided with flexible coupling-pipes to connect with the couplings of
50 conjoining cars not equipped with my automatic couplings.

In coupling cars equipped with the auto-

matic couplings made in accordance with the specifications of the application hereinbefore referred to it was necessary to arrange the cars so that a particular end of a car should
55 conjoin to the next car, for the reason that the pipes for conveying the steam and the air were arranged triangularly in the outer end of the head, and the air-brake pipe is thereby
60 liable to form a connection with the air-pipe for the signal-whistle and produce great confusion thereby. In this improvement the outer end of said pipes is arranged in a single vertical line which is centrally located in
65 the head of the coupling.

As represented in the drawings, A designates the head of my coupling, preferably made in rectangular form and provided with a series of circular chambers, 1, arranged in a single vertical line at the middle of its outer
70 end. Each of said chambers is provided with a face-plate, 2, preferably made rectangular in form and fitted to enter a recess in the outer end of said head and secured by means of screws, 3; said face-plate is provided with
75 a circular opening, 4, for receiving an annulus, B, which protrudes from the outer face of said plate; said annulus is preferably made of some elastic material that will form a steam-tight joint when two of the annuluses are
80 held in forcible contact with each other. The inner end of each of said annuluses is provided with a circumferential flange, 5, which will bear against the inner face of the face-plate 2 and limit the protrusion of said
85 annulus. A gasket, 6, is fixed in the bottom of the recess in the outer end of the head A, so as to form a tight joint to prevent steam or air from passing from one chamber 1 to another one of said chambers; preferably said
90 gasket is made of sufficient size to cover the bottom of the recess in the head A for receiving the face-plates 2, so that one gasket will serve for all of said face-plates on the head,
95 but in such case said gasket should be provided with openings corresponding in diameter and position to the chambers 1. Instead of a single gasket for all the face-plates 2, separate gaskets may be employed for each of said face-plates. An annular expander, C, is
100 fitted to bear against the inner end of each annulus B; the periphery of said expander is

made coniform, and its smaller end is fitted to enter the bore of the annulus. The larger end of the expander is a flat surface and it is arranged to receive the pressure of a coil-spring, D, so that said expander will expand the flange 5 outwardly to bear against the walls of the chamber 1, wherein it is fixed, and thereby form a steam-tight joint between the periphery of said flange and the bore of said chamber. Leading from the inner end of each chamber 1 a passage, 7, is formed to communicate with a corresponding pipe of a series of pipes carried by the coupling, but said series will be referred to herein later on.

Each head A—like those described in my application hereinbefore referred to—is provided with guide-tongues or tenons, 8 and 9, and with mortises, 10 and 11, so arranged that the mortise 10—which is designed to receive the tongue 8 of a conjoining head—will be formed at the outer side of the tongue 9 and the latter is curved toward the center of the head A for the purpose of guiding the tongue 8 of a conjoining head into the mortise 10; the mortise 11 is designed to receive the tongue 9 of a conjoining head and it is formed at the inner side of the base of the tongue 8.

At each side of the head A, a lateral flange or wing, 12, is formed for the purpose of attaching flexible suspenders, E, thereto. Said suspenders are adjustable and afford the means for retaining the head A at a required height. The upper side of said head is provided with a hook-shaped flange, 13, and the lower side of the head is provided with hooks, 14, said flange and hooks being designed for a purpose hereinafter explained. The inner end of the head A is preferably made in the form of a sleeve provided with a screw-threaded portion, 15, on its inner side for the purpose of receiving an inclosing tube, F, for covering the steam and air pipes connected to said head, of said pipes, an upper one, 16, may form a connection with the steam-heating system for the cars, a middle one, 17, may form a connection for the air-brake system, and a lower one, 18, may perform a like service for the air-whistle-signaling system; said pipes are secured into corresponding passages, 7, in the head A and, extending through the tube F toward the middle of the car, are held in place by a plate, 19, which forms a closure for the inner end of the tube F; said plate is preferably secured by means of a ring, 20, which screws onto the inner end of the tube F and is further secured by means of screw-studs, 21, which form vertically-arranged trunnions which pass through a gimbal or ring, 22, that forms one element of a universal-joint whereby the inner end of the tube F is supported; said ring is provided with a pair of trunnions, 23, which are arranged quarteringly in respect to the studs 21 and allow the coupling to swing freely; the trunnions 23 are preferably provided with sleeves, 24, which operate as rollers to reduce friction when the coupling has an endwise

movement imparted to it. The projecting ends of the system of pipes of my coupling are connected, by means of flexible hose G, to the particular pipe, of the different systems of pipes within the car, to which each of said pipes in the coupling is appropriated.

H designates a hanger, made in two separable parts of counterpart form bolted together, as at 25, and secured to the bottom side of a car, for the purpose of carrying the inner end of my coupling; the sides of said hanger are each provided with a slotted opening, 26, for receiving the trunnions 23, so that the latter can have a sliding movement in said openings—as when the coupling is moved inwardly or outwardly—or an oscillatory movement when required. Said slotted openings are arranged to lie directly opposite to each other in the side-pieces of the hanger H. The latter has on each of its side-pieces a longitudinally arranged arm, 27, which extends toward the head A; said arms take against an abutting-plate, 28, which forms an immovable barrier to resist an inward movement of the spring by which the coupling is forced outwardly; said abutting-plate is provided with a central opening in which the tube F will slide loosely.

I designates a spiral-spring which surrounds the tube F; the inner end of said spring bears against the abutting-plate 28, and its outer end takes against an adjustable-collar, J, by which the tension of said spring can be regulated; said collar is provided with set-bolts, 29, whose inner ends engage in oppositely arranged spiral-grooves, 30, formed in the periphery of the tube F; the arrangement being such that, when the set-bolts 29 have slightly slackened, by turning the collar J in one direction the spring I will be compressed to give it more effective strength, but by turning said collar in an opposite direction the strength of said spring will be lessened. When the collar J has been adjusted to a required position, the set-bolts 29 should be screwed in to the grooves 30 to a sufficient distance to hold said collar in an immovable position.

The operation of automatically connecting the heads of my couplings on different cars will be found fully set forth in the specification of my former application hereinbefore referred to, and a repetition of the same will not be necessary.

For the purpose of connecting a car provided with my coupling to one provided with any of the ordinary couplings for the steam- and air-pipes, I provide a detachable plate, K, fitted to clamp onto the head A; said plate has at one end a lug, 31, extending at right-angles to its inner face and provided with a transverse pin, 32, which is adapted to engage with the hooks 14 of said head; at the opposite end of said plate, lugs, 40, are formed, and to the latter are jointed links, 33, whose opposite end is jointed to a yoke or forked-lever, L, by means of pivots, 34, adjacently

located to the inner end of said lever. A transverse-pin, 35, is fixed in the forked portion of said lever, so that the pivots 34 will lie between the handle 36 and said transverse-pin. The latter is adapted to engage under the hook-shaped flange 13, under which said pin will pass freely when the lever L is swung into the position indicated by dotted lines in Fig. 7. Then, by swinging the lever L into the position shown by full lines in Fig. 7, the plate K will be drawn toward the end face of the head A; and in making this last described movement, the plate K will be moved into contact with the protruding end of the annulus B and force each of the latter inwardly against the resistance of the springs D. A steam-tight joint will thus be formed by each annulus B with the inner face of the plate K. A series of openings, 39, is formed in the plate K and they are so arranged that each of said openings will communicate with the opening of a corresponding annulus B. Each of said openings 39 is provided with a pipe-nipple, 37, and each of said nipples has a flexible tube, 38, attached thereto for the purpose of carrying a suitable coupling for forming an attachment to an ordinary form of coupling for steam and air pipes. In the accompanying drawings, the coupling last referred to is not shown, for the reason that any of the well-known forms of such couplings in use may be attached to the flexible tube 38. The plate K can be readily detached from the head A by simply reversing the operation above described for attaching said plate to the head A.

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

1. In an automatic coupling for the steam and air pipes of railway-cars, the combination of a head provided with a series of chambers arranged in a single vertical line which cor-

responds to the central line of said head; each of said chambers having an opening leading outward through said head—whereby a positive communication can be established with corresponding openings in a like head regardless of any particular end of the conjoining cars—each chamber containing a spring-actuated annulus whose outer end protrudes beyond the plane of said head, a conical expander interposed between each annulus and its corresponding spring, a separate pipe leading rearwardly from each of said chambers, an inclosing tube for said pipes provided with an adjustable collar, and a coil spring surrounding said tube and having one of its ends bearing against said collar and its opposite end bearing against an abutment through which said tube will loosely slide, as and for the purpose herein specified.

2. In a coupling for steam or air pipes for railway-cars, the combination of a head provided with passages for steam or air, and a detachable plate provided with passages corresponding to the passages of said head and having a flexible tube communicating with each passage; said plate being fitted to lock fast to said head, as and for the purpose herein specified.

3. In a coupling for steam or air pipes for railway-cars, the combination of a head having catches or hooks on opposite sides, and a detachable plate fitted to cover the outer end of said head and provided with means for engaging with said catches or hooks of said head; whereby said plate may be readily attached to and detached from said head, as and for the purpose herein specified.

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Witnesses:

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