(No Model.) 2 Sheets—Sheet 1.

J. C. MITCHELL.

STEAM COUPLING.

No. 558,696. Patented Apr. 21, 1896.

Fig. 1.

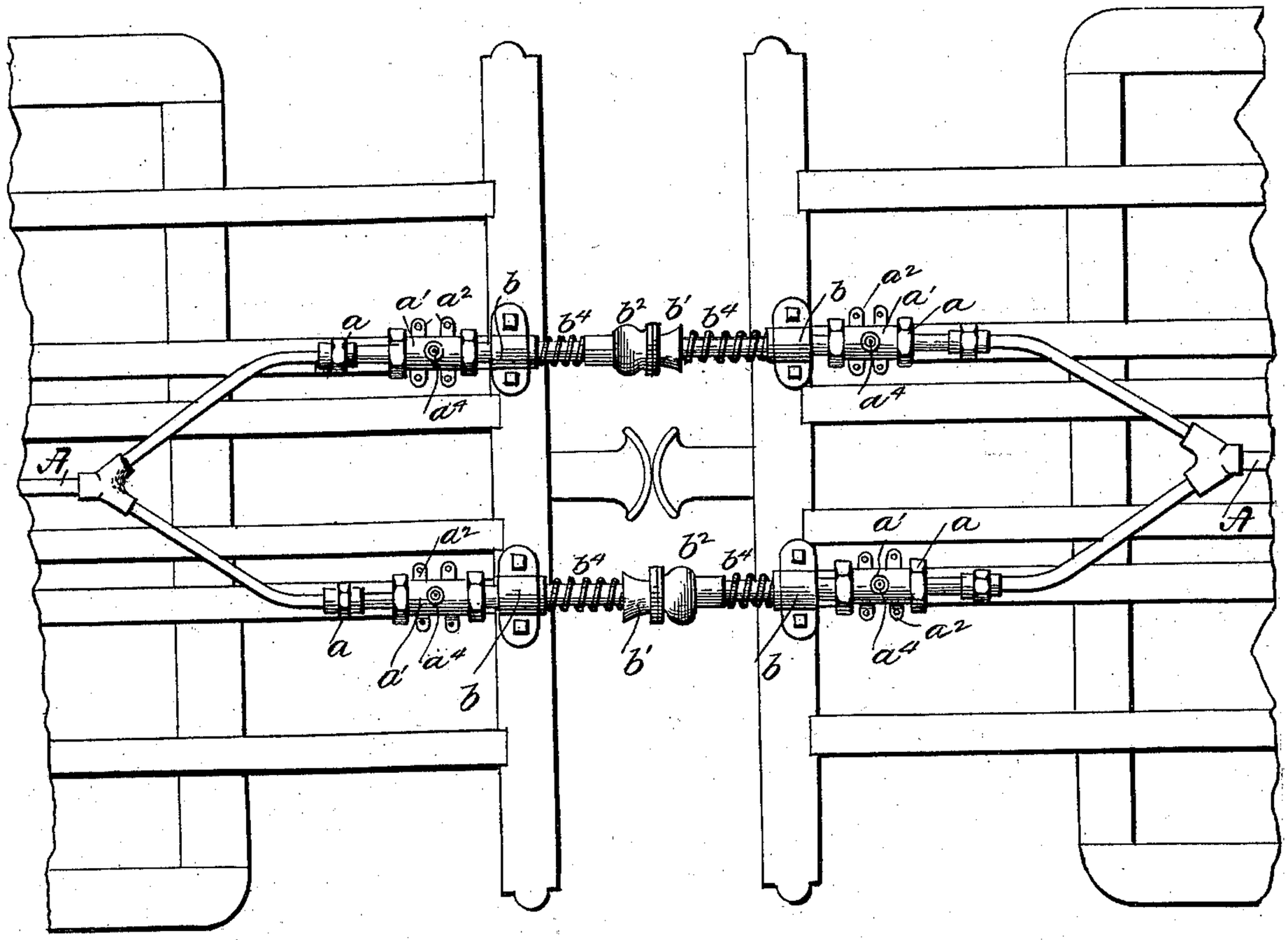


Fig. 4.

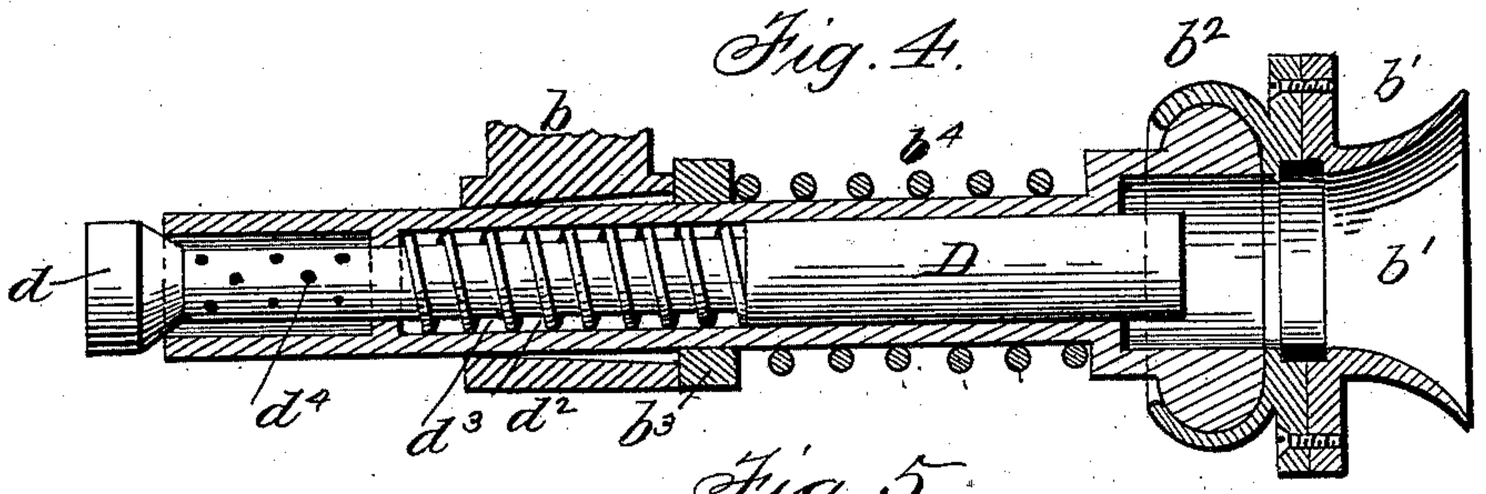
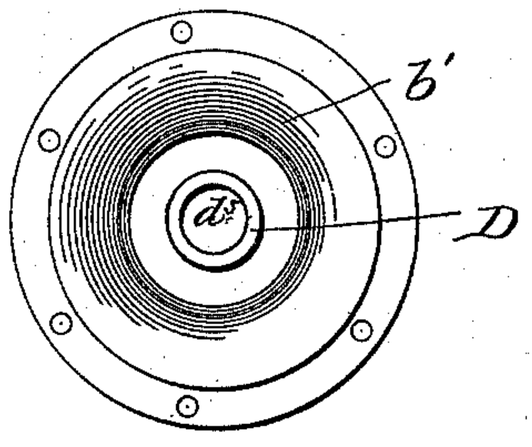


Fig. 5.



Witnesses
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Jos. Gregory

Inventor
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by J. Fred. Reily,
his Attorney.

(No Model.) 2 Sheets—Sheet 2.

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STEAM COUPLING.

No. 558,696. Patented Apr. 21, 1896.

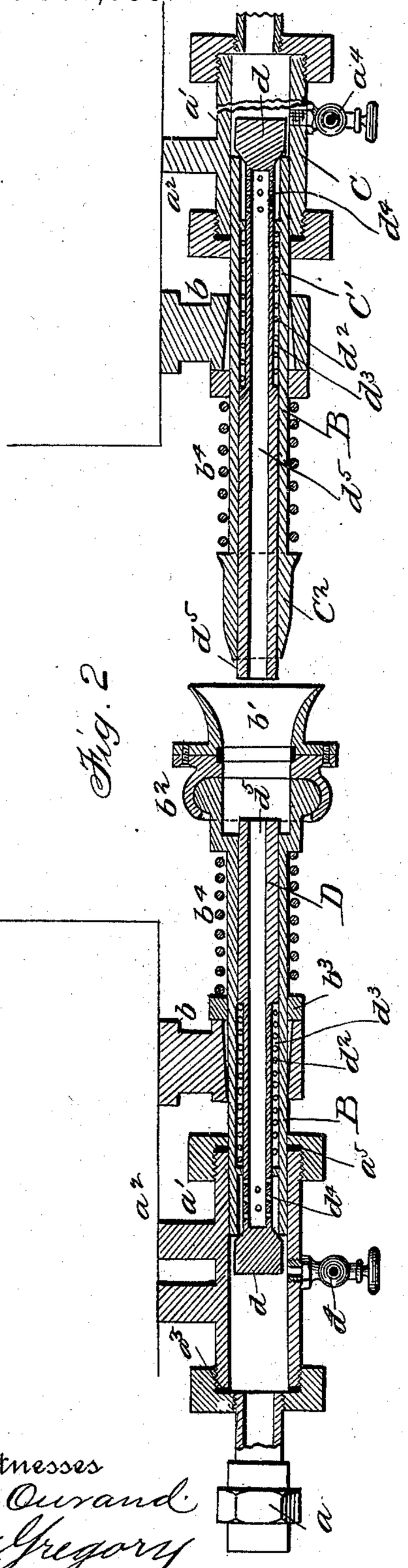

Fig. 2.

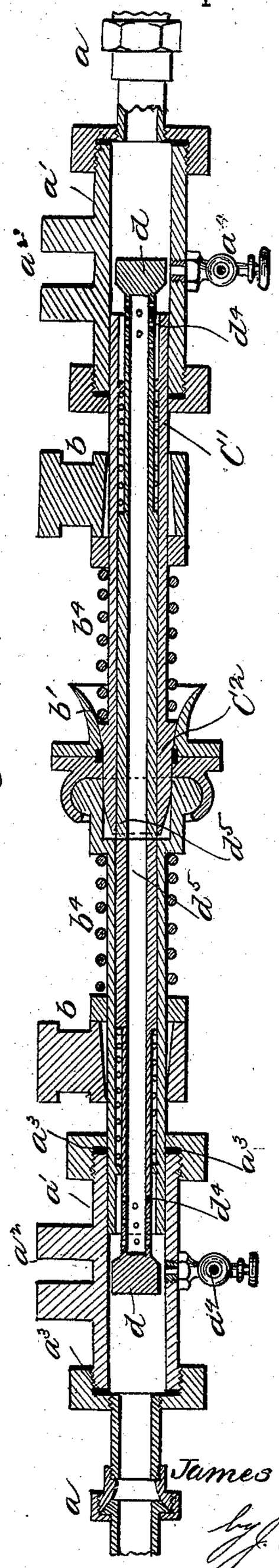

Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES C. MITCHELL, OF LANCASTER, NEW HAMPSHIRE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-FOURTHS TO HUBERT R. WEST, THOMAS M. WEST, AND EDWIN C. WOOD, OF LEWISTON, AND GEORGE F. THOMPSON, OF NEW GLOUCESTER, MAINE.

STEAM-COUPLING.

SPECIFICATION forming part of Letters Patent No. 558,696, dated April 21, 1896.

Application filed July 13, 1895. Serial No. 555,834. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. MITCHELL, a citizen of the United States, residing at Lancaster, in the county of Coos and State of New Hampshire, have invented certain new and useful Improvements in Steam-Couplings; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in steam heating apparatus; and it has for its object the production of simple and improved means for coupling the meeting pipes of the steam-heating systems of two adjoining railway-cars. In the systems now in general use the steam-heating pipes of two adjoining cars are usually united by a flexible hose, which hangs down in a loop between the cars. This is a constant source of annoyance because of the condensation of steam therein, and the water thus formed frequently freezes in cold weather, thus impairing the efficiency of the heating service. Then again, train-hands are frequently scalded while in the act of uncoupling by the accumulated water in said hose. It is these and other disadvantages that my invention is designed to overcome or correct.

In carrying out my invention I connect to the usual system of steam-pipes two extension-cylinders, one at each end of a car, and to each of said cylinders is connected a pipe or sleeve, which is adapted to slide back and forth therein and form an extension-joint, the interior of said cylinders being supplied with packing to prevent leaking. One of these pipes or sleeves is provided with a bell end, which is connected thereto by a universal joint, which is designed to compensate for vibration, jerking, &c., of the cars when the steam-pipes are coupled. The other pipe or sleeve is provided with a headed portion, which is designed to enter said bell end and fit snug therein. Adjacent the outer ends of each of said pipes or sleeves is secured a collar, against which bears one end of a coil-spring encircling each of said pipes or sleeves and bearing against the bell end and headed end, respectively. The steam-pipes proper are carried by the pipes or sleeves and are arranged to have a limited sliding movement therein, the inner ends of said pipes being closed by a solid enlarged portion or head which is normally held against the ends of said sleeves by a suitable spring, said steam-pipes at their outer ends projecting a short distance beyond the ends of said pipes or sleeves, whereby when the parts are coupled the ends of said pipes will touch, and the pressure will push the solid or headed ends away from the other ends of said sleeves, thus allowing steam to pass from the extension-cylinders into the steam-pipes through holes or ports formed in the latter.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a bottom plan view showing the adjoining ends of two cars and illustrating my invention. Fig. 2 is a longitudinal sectional view of the parts uncoupled. Fig. 3 is a similar view showing the parts coupled. Fig. 4 is a sectional detail view of one of the tubes or sleeves B and its parts. Fig. 5 is an end view of the bell end of said sleeve.

Referring to the drawings, A designates the ordinary system of steam-heating pipes for a railway-car, the same at one end being connected by a coupling-nut a to an extension-cylinder a', which is secured to the bottom of the car by suitable hangers a^2. This cylinder is provided with packing a^3 and is provided with a drip-valve a^4, whereby any condensation within said cylinder may be readily and quickly drawn off.

Within cylinder a' is designed to work back and forth the inner end of a pipe or sleeve B, which is additionally supported by a hanger b, provided with a tapering cylindrical portion through which said sleeve is passed, said taper being designed to allow for the vibration of the pipes while the car is in motion.

At its outer end the sleeve B is provided with a bell end b', which is united to said sleeve by a universal joint b^2, whereby said bell end is capable of play in all directions to overcome vibration of the parts while the car is in motion. Between the bell end b' and a collar b^3 on sleeve B bears a coil-spring b^4, which encircles said sleeve and is adapted to break the shock on the parts when two adjoining cars are coupled together. At the other end of the car an extension-cylinder C is secured to the piping A, and the same is identical in every way with cylinder a'. The sleeve C', which leads therefrom, is provided with a head C^2 in lieu of the bell end b', said head being designed to fit within the bell end of the pipe or sleeve of an adjoining car when the two are coupled together.

D D represent tubular valve-stems, which fit within the pipes or sleeves B and C' and are adapted to have a limited longitudinal movement therein. Each of the valve-stems D is provided with a solid enlarged headed portion d, which is normally held close against the end d' of each sleeve B and C' by a coil-spring d^2, which fits around a reduced portion d^3 of each of said pipes. Holes or ports d^4 are formed in each valve-stem adjacent the head d. The outer end d^5 of each of said valve-stems is projected a short distance beyond the edge of the supporting-sleeve.

The operation is as follows: When two cars are coupled together, the head C^2 of one section enters the bell end b' of the other section, the protruding ends d^5 of the valve-stems D coming in contact and forcing the enlarged ends or heads d away from the edge of its carrying-sleeve. Steam can then pass from the extension-cylinder through the ports d^4 into the tubular valve-stems D and thence to the adjoining car, a close joint being constantly maintained, the universal joint b^2 and springs b^4 compensating for vibration, jarring, jerking, &c., consequent upon the cars coming together, passing around curves, and the like. When the cars are uncoupled, the headed ends d again seat themselves against the edges of their carrying-sleeves and thus shut off further passage of the steam. For the purpose of convenience it is preferable to arrange two series of pipes at each end of a car, one being provided with the sleeve having a bell end and the other with a sleeve having the headed portion, so as to avoid the delay and annoyance caused by cars becoming reversed.

The advantages of my invention are at once apparent. It will be seen that a close joint is constantly maintained, that there can be little or no condensation, and that it is not necessary to go between the cars to couple or uncouple the steam-pipes, as is now the case. It will also be seen that this system of coupling the pipes can be conveniently used for coupling the air-pipes of the brake system.

I claim as my invention—

1. The herein-described coupler for steam-pipes, comprising an extension-cylinder, and sleeve adapted to work back and forth in said extension-cylinder and having a bell end, a second sleeve having a headed end adapted to fit in said bell end, and tubular valve-stems carried by said sleeves and having headed ends adapted to close the ends of the latter, said valve-stems communicating with said sleeves, substantially as set forth.

2. The herein-described coupler for steam-pipes, comprising an extension-cylinder, a sleeve adapted to work back and forth in said extension-cylinder, a bell end connected thereto by a universal joint, a second sleeve having a headed end adapted to fit in said bell end, and tubular valve-stems carried by said sleeves, and having headed ends adapted to close the ends of the latter, said valve-stems communicating with said sleeves, substantially as set forth.

3. The herein-described coupler for steam-pipes, comprising an extension-cylinder, a sleeve adapted to work back and forth in said cylinder, a bell end connected thereto by a universal joint, a second sleeve having a headed end adapted to fit in said bell end, tubular valve-stems adapted to slide back and forth in said sleeves and provided with closed headed ends and having communication with said sleeves, and means for normally holding said headed end against the ends of said sleeves, substantially as set forth.

4. The herein-described coupler for steam-pipes, comprising an extension-cylinder, a sleeve adapted to work back and forth in said cylinder, a bell end connected thereto by a universal joint, a second sleeve having a headed end adapted to fit in said bell end, tubular valve-stems adapted to slide back and forth in said sleeves and provided each with an inner closed portion and an outer open portion and provided with holes or openings adjacent said closed portion, and a spring for normally holding said closed portions against the ends of said sleeves, substantially as set forth.

5. The herein-described coupler for steam-pipes, comprising an extension-cylinder, a sleeve adapted to work back and forth in said cylinder, a bell end connected thereto by a universal joint, a second sleeve having a headed end adapted to fit within said bell end, coil-springs or buffers encircling said sleeves, and tubular valve-stems adapted to slide back and forth in said sleeves and provided each with an inner closed portion and an outer open portion and having holes or openings therein adjacent said closed portions, said outer open portions being designed to project beyond said sleeves, and a spring for normally holding said closed portions against the ends of said sleeves, substantially as set forth.

6. The combination with an extension-cylinder, a sleeve adapted to work back and forth therein, a bell end connected to said sleeve by a universal joint, of a second extension-cylinder, a sleeve adapted to work

back and forth therein and provided with a headed end designed to fit within said bell end, tubular valve-stems adapted to slide back and forth in said sleeves and provided with inner headed ends, and springs for normally holding said headed ends against the inner ends of said sleeves, substantially as set forth.

7. The combination with an extension-cylinder, a sleeve adapted to work back and forth therein, a bell end connected to said sleeve by a universal joint, of a second extension-cylinder, a sleeve adapted to work back and forth therein and provided with a headed end designed to fit within said bell end, tubular valve-stems adapted to slide back and forth in said sleeves and provided with inner headed or closed ends and outer extended portions, holes or openings being formed therein adjacent said closed ends, and springs for normally holding said closed ends against the inner ends of said sleeves, substantially as set forth.

8. The combination with an extension-cylinder, a sleeve adapted to work back and forth therein, a bell end connected to said sleeve by a universal joint, of a second extension-cylinder, a sleeve adapted to work back and forth therein and provided with a headed end designed to fit within said bell end, hangers for said sleeves having tapering cylindrical portions, springs or buffers encircling said sleeves, tubular valve-stems adapted to work back and forth in said sleeves and provided with inner headed or closed ends and outer extended portions, holes or openings being formed therein adjacent said closed ends, and springs for normally holding said closed ends against the inner ends of said sleeves, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES C. MITCHELL.

Witnesses:

JOS. GREGORY,

ELIZABETH S. POOLE.