

No. 695,839.

Patented Mar. 18, 1902.

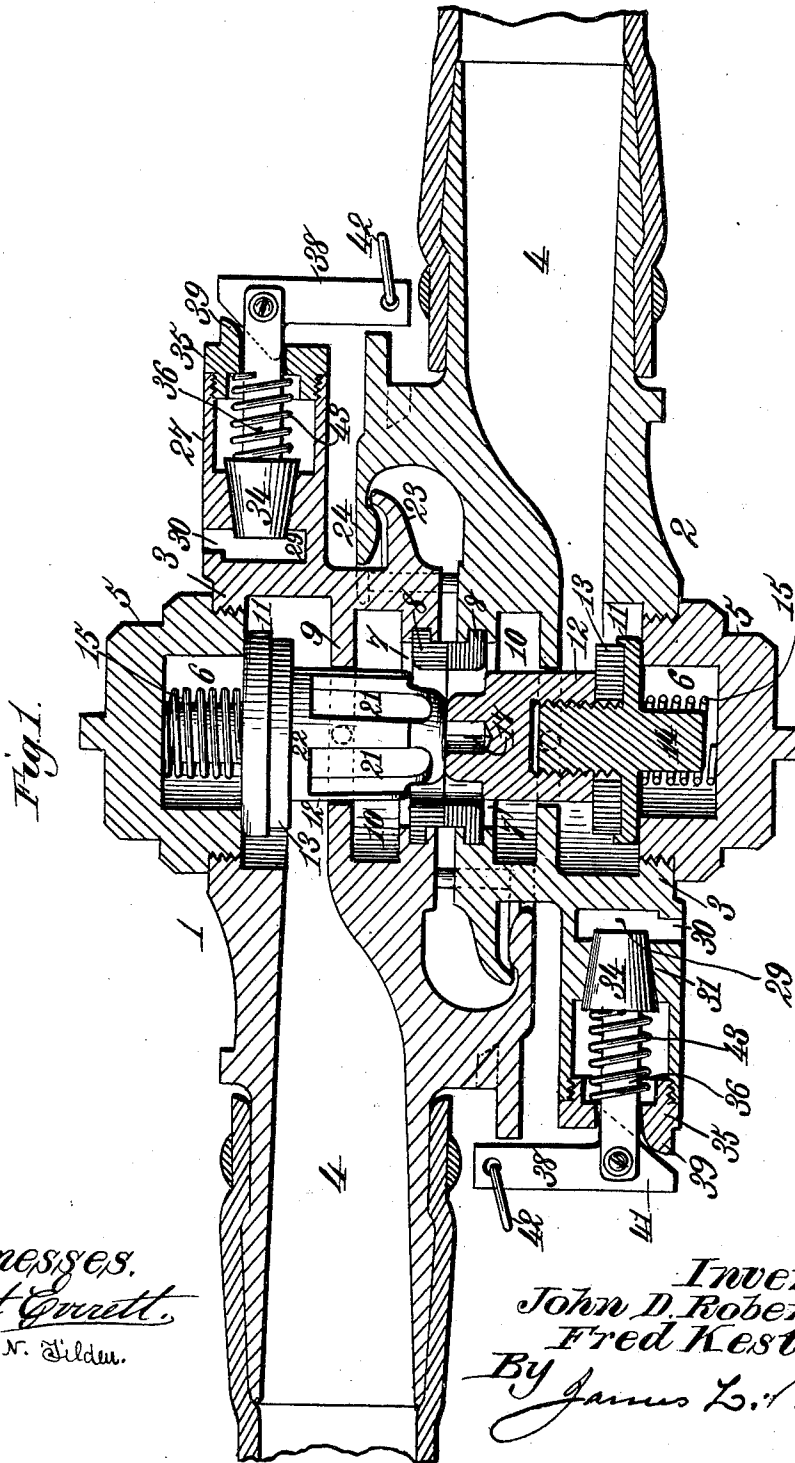
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HOSE COUPLING FOR AIR BRAKES, VACUUM BRAKES, OR STEAM BRAKES.

(Application filed Aug. 3, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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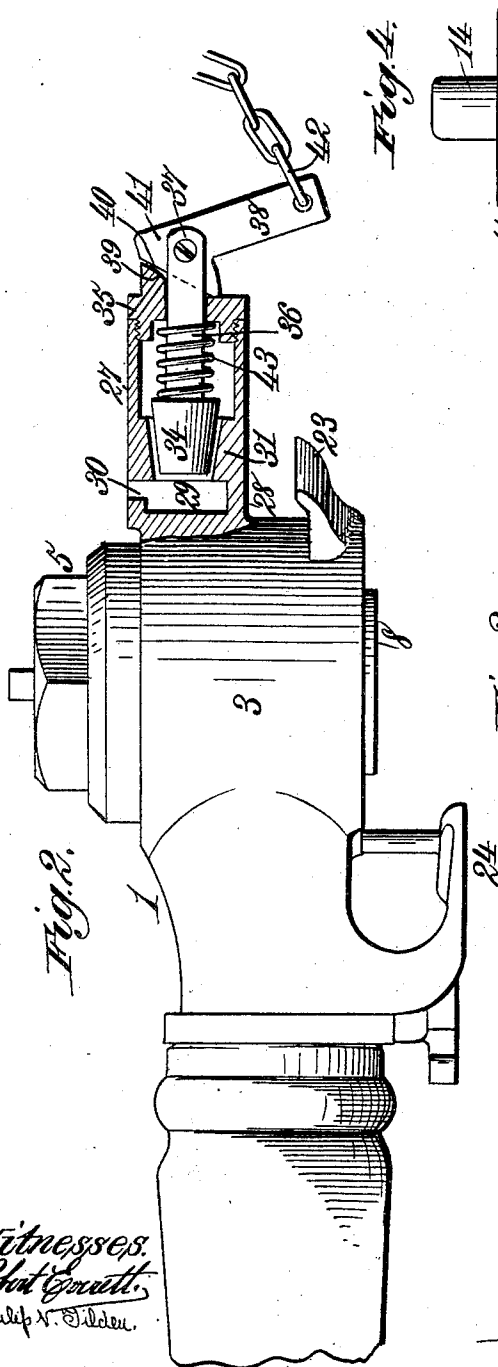
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HOSE COUPLING FOR AIR BRAKES, VACUUM BRAKES, OR STEAM BRAKES:

(Application filed Aug. 3, 1901.)

(No Model.)

2 Sheets—Sheet 2.



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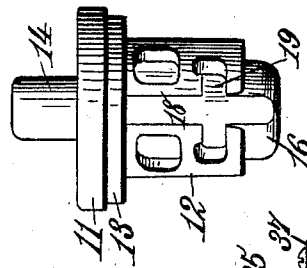
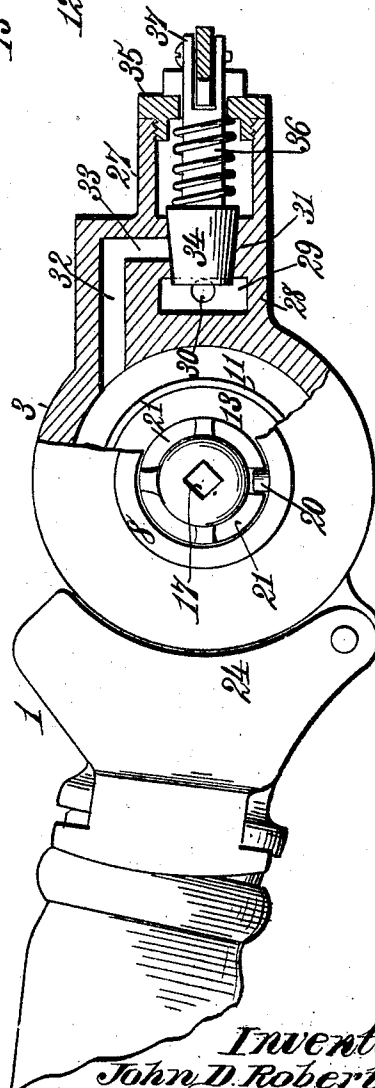


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN D. ROBERTS, OF NEW DECATUR, AND FRED KESTLER, OF
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HOSE-COUPLING FOR AIR-BRAKES, VACUUM-BRAKES, OR STEAM-BRAKES.

SPECIFICATION forming part of Letters Patent No. 695,839, dated March 18, 1902.

Application filed August 3, 1901. Serial No. 70,788. (No model.)

To all whom it may concern:

Be it known that we, JOHN D. ROBERTS, residing at New Decatur, in the county of Morgan, and FRED KESTLER, residing at Birmingham, in the county of Jefferson, State of Alabama, citizens of the United States, have invented new and useful Improvements in Hose-Couplings for Air-Brakes, Vacuum-Brakes, or Steam-Brakes, of which the following is a
10 specification.

This invention relates to hose-couplings for air-brakes, and has for its object to provide such a coupling with an emergency-valve of improved construction which will operate, when the train parts and separates the coupling, to automatically vent the train-pipe and set the brakes.

It also has for its object to provide said emergency-valve with operating mechanism which after it has opened the emergency-valve acts to lock said emergency-valve in its open position until it is closed by hand.

It has for its further object to so construct the coupling as to effectually prevent the entrance of dust; and, finally, it has for its object to improve and simplify the construction and render more certain, safe, and efficient the operation of this type of couplings generally.

To these ends our invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference
35 being had to the accompanying drawings, forming a part of this specification.

Figure 1 is a central longitudinal sectional view of our improved hose-coupling, showing the two members coupled together. Fig. 2 is a view in side elevation of one of the members, showing the emergency-valve and its casing in section. Fig. 3 is a face view, partly in section, of one of the members looking toward the inner face of the member; and Fig. 4 is a detail view of one of the check-valves removed from the casing.

Referring to the drawings, the numerals 1 and 2 respectively indicate the two members of the coupling, one being the exact duplicate of the other, and the construction of one member only need therefore be described in de-

tail. Each member comprises a substantially cylindrical casing 3, provided at one side with a nipple 4, which is adapted to be fitted in the end of a section of the air-brake hose, as usual, said nipple being in direct communication with the interior of the casing, as shown. The coupling member is provided at its outer side with a threaded aperture, in which is screwed a threaded plug 5, recessed on its inner end, as at 6, and said casing on its opposite or inner side is provided with a circular opening 7, in which is fitted a rubber gasket 8, which projects slightly beyond the inner face of the coupling, as shown. Formed integrally with the cylindrical portion 3 of the casing, intermediate the inner and outer ends thereof, is a transverse centrally-apertured partition or diaphragm 9, forming a valve-seat, said valve-seat and the inner face of the coupling member inclosing a space 10 between them, which forms a dust-chamber, as will be hereinafter explained. The space between the valve-seat and the plug 5 constitutes a valve-chamber, and in said chamber is disposed a check-valve comprising a disk 11 and a cylindrical portion 12, a rubber washer 13 being fitted about the cylindrical portion and against the disk and adapted to rest against the valve-seat 9 and close the aperture therein. On the opposite side of the disk is centrally formed a teat or projection 14, and about said teat and between the disk and the plug 5 is disposed a coiled spring 15, which normally operates to hold the disk or valve to its seat and tightly close the aperture in the latter. The outer end of the cylindrical portion 12 of the valve is rounded, as at 16, and has formed therein a key-seat or angular socket 17 for the reception of a key to turn the valve, as will be hereinafter explained. Formed in one side of the cylindrical portion 12 of the valve is a longitudinal groove 18, that is intersected by a transverse or partially circumferential groove 19, that extends on both sides of the longitudinal groove 18 at a right angle to the latter, and at its ends is deflected slightly toward the disk 11, as shown, in manner similar to a bayonet-slot. A pin or lug 20 is formed on or fitted in the valve-seat and projects laterally into the aperture therein and

fits loosely in the longitudinal groove 18 in the cylindrical portion of the valve. The said cylindrical portion of the valve is also provided for a portion of its length with
 5 grooves or recesses 21, that form air-passages for the passage of air past the cylindrical portion of the valve when the latter is raised from its seat, as most clearly shown by dotted lines in Fig. 1 of the drawings, that part of
 10 the said cylindrical portion lying adjacent to the disk 11 and washer 13, as at 22, being ungrooved, whereby when the valve is closed said ungrooved portion 22 will completely fill the aperture in the valve-seat and prevent
 15 the passage therepast of dust.

Formed on the end of the casing 3 is a segment-shaped curved or inclined flange 23, and formed on the opposite side of said casing is a curved or inclined hook-shaped flange
 20 24, the flanges being so constructed and arranged that when two members are coupled together, as shown in Fig. 1, the faces of the flanges 23 engage the corresponding faces of the flanges 24 and exert a wedge-like action
 25 one upon the other and draw the two members of the coupling tightly together, as will be readily understood by those skilled in the art. When the two members are coupled together, the ends of the cylindrical portions 12
 30 of the valves abut one another and force the valves 11 from off their seats, thus placing the two sections of hose in communication, and the hose is thus coupled up between the adjacent ends of the cars throughout the
 35 train, the spring 15 forcing the valve to its seat and closing the hose at the rear end of the rear car of the train.

Formed on the end of the valve-casing of each coupling member is a cylindrical valve-chamber 27, which is connected to the valve-casing 3 by a neck 28. Formed in the neck 28 is a chamber 29, which communicates with the atmosphere by a port 30 and is separated
 40 from the valve-chamber by a centrally-apertured partition or diaphragm 31, forming a valve-seat. A passage 32 is formed in the neck and communicates at one end with the interior of the casing 3 and at its other end terminates in a port 33, that opens into the
 45 aperture in the partition or valve-seat 31. The aperture in the valve-seat is made tapering or flaring, as shown, and fitted in said aperture is a conical valve 34, that normally closes the port 33. The end of the valve-chamber 27 is closed by a cap 35, screwed therein, and the valve 34 is provided with a
 50 stem 36, that projects through an opening formed centrally in said cap and is forked at its outer end, as at 37. Pivoted in the forked
 55 end 37 of the valve-stem of the emergency-valve is the cam-shaped head 41 of a lever 38, said head being approximately the shape of a triangle, and formed on the outer face of the cap 35 is a cam-shaped rib or lug 39, that
 60 is engaged by the inclined face 40 of the cam-shaped head. A ring 42 is secured in the end of the lever 38 for the attachment of a cord

or chain, which leads up to the platform or the top of the car. A coiled spring 43 is disposed about the valve-stem 36 and at one end
 70 bears against the cap 35 and at its other end bears against the valve 34 and holds the latter to its seat. The operation of this part of the invention is as follows: When the two members of the coupling are coupled together
 75 and the brake system is in operative condition, the emergency-valve 34 will be closed and its connected parts in the position shown in Fig. 2 of the drawings. Let it be assumed, however, that two of the cars become un-
 80 coupled and the train separates, uncoupling the two members 1 and 2. Then the check-valves 11 will be immediately closed by the springs 15, preventing the escape of air past said valves. As the two members 1 and 2 are
 85 pulled apart, however, the flange 23 of one of the members thrusts the end of the lever 38 outward and oscillates said lever on its pivot. As the lever oscillates its cam-shaped head 41 moves on the rib or lug 39 as a ful-
 90 crum and draws out the stem 36 of the emergency-valve and retracts the latter from its seat. The air then escapes from the hose through the passage 32, chamber 29, and port 30 to the atmosphere, thus setting the brakes
 95 and stopping the train. When the lever 38 is rocked on its fulcrum to open the emergency-valve in the manner described, the cam-shaped head 41 is turned crosswise or transverse to the forked end of the valve-stem, and when
 100 the spring 43 attempts to force the emergency-valve back to its seat the opposite ends of the said cam-shaped head respectively abut the rib or lug 39 and the outer face of the cap 35 on opposite sides of the valve-stem and
 105 lock said valve-stem in its retracted position and prevent the valve from returning to its seat until the lever 38 has been returned to its normal position by hand. The emergency-valve is thus locked and held in its open po-
 110 sition, and the brakes cannot be thrown off or released until the emergency-valve is purposely closed for the purpose. The brakes may be set in a similar manner by one of the train attendants in the event of the engineer
 115 neglecting to apply the brakes at a proper stopping-place from any cause, the attendant merely having to pull the cord or chain attached to the ring 42, thereby opening the emergency-valve and holding or locking it
 120 open until closed by hand in precisely the same manner as when two cars become uncoupled. As before stated, when the two members of the coupling are coupled together the end of the cylindrical portions of the check-
 125 valves abut one another and force the latter from their seats. When it becomes necessary to couple one of the members of our improved coupling to another coupling member of different form and construction, the check-
 130 valve must be held from off its seat, and this is quickly accomplished by inserting a key in the key seat or socket 17 in the outer end of the cylindrical section of the check-valve,

pressing the valve inward away from its seat, and turning it either to the right or the left. This causes one or the other end of the circumferential groove 19 to engage the pin 20, and when said pin enters the deflected end of said groove the spring 15 forces the check-valve slightly back toward its seat and locks the valve in its open position, so that it cannot be accidentally displaced and closed. By constructing the check-valve in the novel manner shown and described a twofold result is accomplished. It will be noted that the disk 11 seats on the valve-seat, while the upper ungrooved part of the cylindrical portion of the valve fits the circular aperture in the valve-seat, thus forming two closures against the escape or leakage of air and also effectually preventing the entrance of dust should any effect an entrance between the outer end of the cylindrical portion of the valve and the gasket 8. Moreover, should any dust effect an entrance between said gasket and the cylindrical portion of the valve it will be trapped in the dust-chamber 10 and be prevented from reaching the triple valve usually employed for controlling the brakes. When the members are coupled together, as soon as the check-valves lift from their seats the air-pressure blows the dust out of the dust-chamber 10. Owing to the construction shown and described it is utterly impossible for the emergency-valve to be blown open by the pressure in the train-pipe, for the port 33 does not open against the end of the valve, but against the side, and hence the pressure of the air in the train-pipe has no effect on the valve. Moreover, dust will not escape past said valve into the passage leading to the train-pipe, as the port 30 does not communicate directly with the aperture in the valve-seat, but with a chamber 29.

It will be obvious to those skilled in the art that the details of construction of our improved coupling may be altered or varied without departing from the spirit of our invention, and we wish it to be understood that we do not limit ourselves to such details of construction excepting as hereinafter specifically set forth in the appended claims.

Having described our invention, what we claim is—

1. In a coupling for air-brake hose, the combination with the two coupling members provided with means for coupling them together and with check-valves, of an emergency-valve for controlling a vent in one of said members, means for normally holding said emergency-valve closed, and mechanism for opening said emergency-valve and positively locking it in its open position, substantially as described.

2. In a coupling for air-brake hose, the combination with the two coupling members provided with means for coupling them together and with check-valves, of an emergency-valve for controlling a vent in one of said members, means for normally holding the emergency-valve closed and mechanism arranged to au-

tomatically open the emergency-valve and lock it in its open position upon the forcible separation of the coupling members in an endwise direction, substantially as described.

3. In a coupling for air-brake hose, the combination with the two coupling members provided with means for coupling them together and with check-valves, of an emergency-valve for controlling a vent in one of said members, a spring operating to normally hold the emergency-valve closed, a lever pivoted to the end of the stem of the emergency-valve and provided with an eccentric arranged, when the lever is oscillated, to engage a fixed projection and open said valve, and means for oscillating said lever, substantially as described.

4. In a coupling for air-brake hose, the combination with the two coupling members provided with means for coupling them together and with check-valves, of an emergency-valve for controlling a vent in one of said members and provided with a stem projecting through an aperture in a fixed cap, a spring operating to normally hold said valve closed, a lever pivoted to the end of the valve-stem and provided with an eccentric arranged, when the lever is oscillated, to engage said cap and open said valve, said eccentric when turned to open the valve straddling the aperture in the cap and locking the emergency-valve in its open position, and means for oscillating said lever, substantially as described.

5. In a coupling for air-brake hose, the combination with the two coupling members provided with means for coupling them together and with check-valves, of a cylindrical valve-casing carried by one of said members, a valve-seat in said casing, an emergency-valve arranged to fit in and close said valve-seat, an air-passage in the casing communicating at one end with the interior of the coupling member and terminating at its other end in a port formed in the wall of the valve-seat and opening against the side of the valve, a chamber in the casing communicating with the valve-seat and provided with a port opening into the atmosphere, means for normally holding the emergency-valve closed, and mechanism arranged to automatically open the emergency-valve upon the forcible separation of the coupling members in an endwise direction, substantially as described.

6. In a coupling for air-brake hose, the combination of two coupling members provided with means for coupling them together, each of said members comprising a cylindrical valve-casing having a valve-seat opening to the exterior of the casing, a valve arranged in the casing and comprising a disk adapted to seat on the valve-seat and a cylindrical portion arranged to project through the valve-seat to the exterior of the casing, said cylindrical portion of said valve being provided with longitudinal recesses on its periphery forming passages for the air when the disk is raised from its seat, and a spring for forcing the valve to its seat, substantially as described.

7. In a coupling for air-brake hose, the combination of two coupling members provided with means for coupling them together, each of said members comprising a cylindrical valve-casing having a valve-seat opening to the exterior of the casing, a valve arranged in the casing and comprising a disk adapted to seat on the valve-seat and a cylindrical portion arranged to project through the valve-seat to the exterior of the casing, said cylindrical portion of the valve having longitudinal recesses in its periphery forming passages for the air when the disk is raised from its seat and having a perfectly cylindrical portion above said recesses arranged to close the opening in the valve-seat when the valve is seated, and a spring for forcing the valve to its seat, substantially as described.

8. In a coupling for air-brake hose, the combination of two coupling members provided with means for coupling them together, each of said members comprising a cylindrical valve-casing having a valve-seat opening to the exterior of the casing, a valve arranged in the casing and comprising a disk adapted to seat on the valve-seat and a cylindrical portion arranged to project through the valve-seat to the exterior of the casing, said cylindrical portion of the valve having a bayonet-

groove in its periphery, a pin on the valve-seat engaging said groove, a spring for forcing the valve to its seat, and a key-seat in the outer end of said cylindrical portion for the reception of a key to press back the valve from its seat and to turn it to cause the pin to interlock with the bayonet-joint and hold the valve open, substantially as described.

9. In a coupling for air-brake hose, the combination of two coupling members provided with means for coupling them together, each of said members comprising a cylindrical valve-casing having a valve-seat opening to the exterior of the casing, a valve arranged in the casing and adapted to seat on said valve-seat, a spring for holding the valve to its seat, an aperture in the casing opposite the valve-seat, and a dust-chamber in the casing between said aperture and valve-seat, substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JOHN D. ROBERTS.
FRED KESTLER.

Witnesses:

W. K. ATKINSON,
W. S. COOPER.