

No. 622,522.

Patented Apr. 4, 1899.

J. McDOUGALL & J. PERRIE.
DUST VALVE FOR AIR BRAKES.

(Application filed June 22, 1898.)

(No Model.)

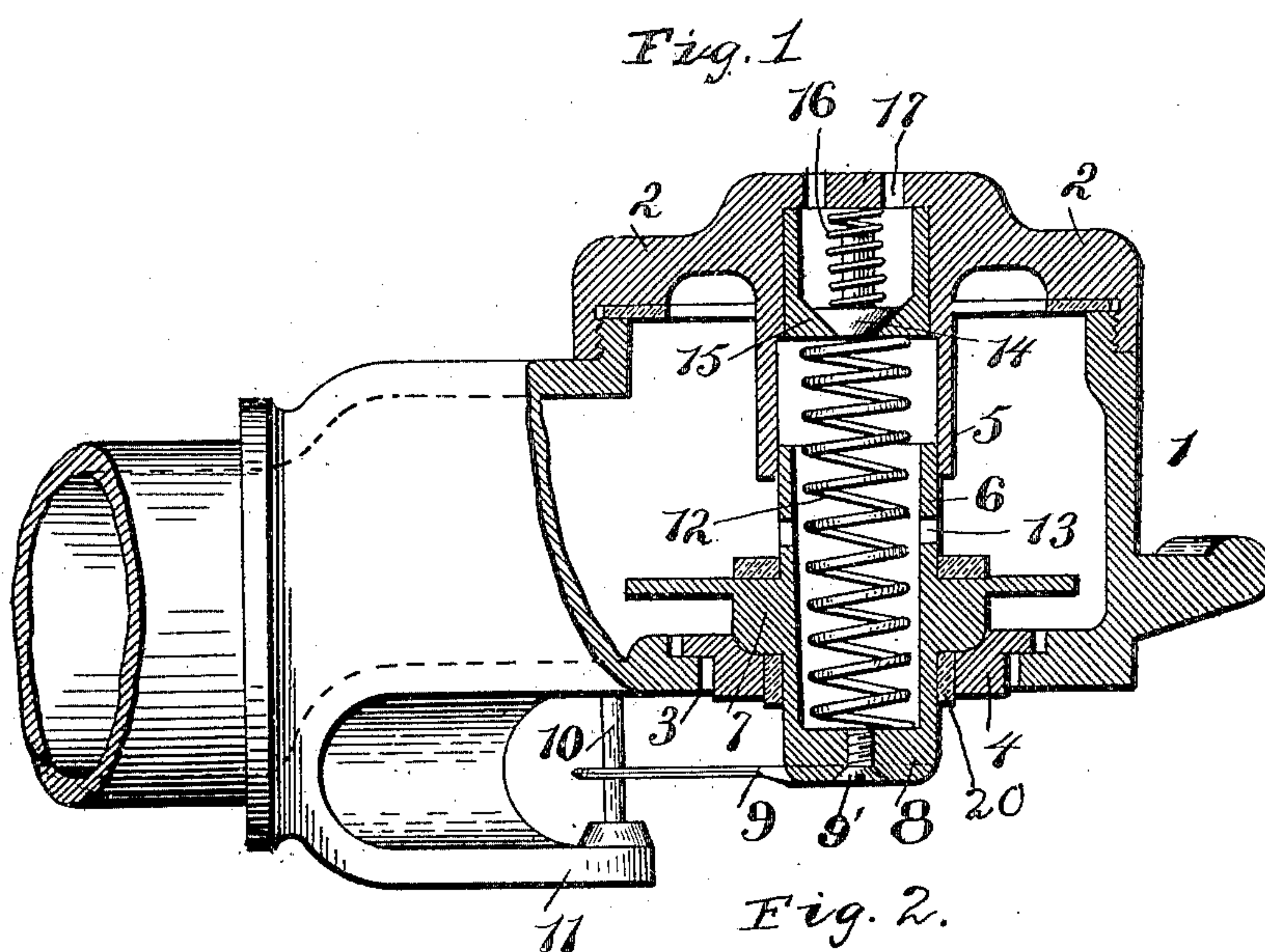
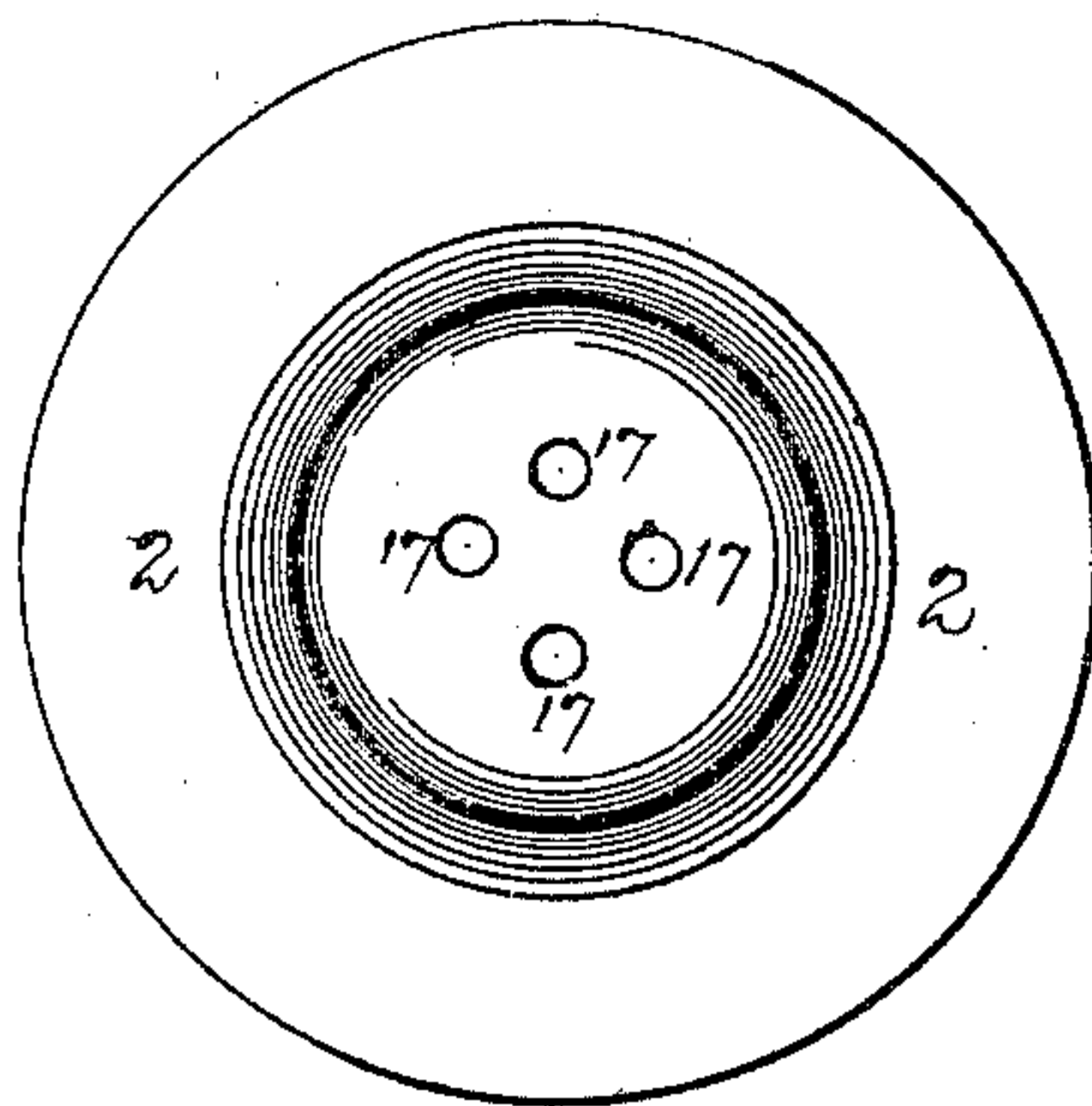


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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DUST-VALVE FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 622,522, dated April 4, 1899.

Application filed June 22, 1898. Serial No. 684,142. (No model.)

To all whom it may concern:

Be it known that we, JAMES McDOUGALL, residing at Buffalo, and JOHN PERRIE, residing at Depew, in the county of Erie and State of New York, citizens of the United States, have invented certain new and useful Improvements in Dust-Valves for Air-Brakes; and we 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 figures of reference marked thereon, which form a part of this specification.

Our invention relates to an improvement in valves for air-brakes; and it consists in a valve-seat made of any suitable material and applied to each half of the coupling and a spring-actuated valve which extends through the seat, and which valve is provided with a perforated tube through which the air passes to the spring-actuated valve, combined with a removable cap which is applied to the outer side of the coupling and a spring-actuated valve that is applied to this cap and through which valve the air escapes when the pressure reaches a certain regulated degree while the main valve is closed, all of which will be more fully described hereinafter.

The objects of our invention are to provide air-brakes with valves which are absolutely dust and moisture proof; to apply a spring-actuated relief-valve to the cap and through which the air is free to escape when the main valve is closed and the pressure exceeds a certain regulated degree; to connect to the main valve a telescoping perforated tube which when the main valve is opened moves or closes into the larger tube, so as to close the opening through the movable one, and thus relieve the smaller valve from air-pressure; to connect to the main valve an arm which has its outer end to pass over a guiding-rod, so that the valve can be forced inwardly when the opposite or partner connection is not equipped with a valve constructed as here shown and described, and to provide each half of the coupling with a valve-seat and valve that is absolutely dust and moisture proof under all circumstances.

Figure 1 represents a vertical section of an air-brake hose connection which embodies our invention. Fig. 2 is a detail view of the cap, showing the perforations. Fig. 3 is a vertical cross-section taken through the plate 9.

1 represents the frame of the air-brake hose connection, which is provided with the removable cap 2 at its outer side and the opening 3 through its inner side, in which is placed the valve-seat 4, which is made of rubber, metal, or any other suitable material, for forming a dust and moisture proof valve-seat. Extending inwardly from around the center of the cap 2 is the stationary tube 5, into which the perforated tube 6 telescopes, and to the outer end of which tube 6 is secured a suitable valve 7, which is formed of metal and made integral with the tube 6. The outer end 8 of the tube 6 projects entirely through the valve-seat any desired distance and is adapted to be actuated when the two parts of the brake are brought together, no matter whether the opposite or partner connection is provided with a protruding portion 8 of the valve or not. To the outer end of the tube is secured the arm 9 by means of the screw 9', and the outer end of this arm 9 slides freely upon the guiding-rod 10, which extends vertically between the outer face of the casing 1 and the coupling-flange 11, formed thereon. When the two parts of the coupling are brought together, if both of them are provided with valves such as here shown the outer ends 8, by coming in contact, force both of the valves inwardly, so as to open the valves and allow a free passage of air from one part into the other through the opening through which the closed end 8 of the tube 6 projects. The air then passes over the valve-seat and around the end 8 of the tube, which is forced into the body sufficiently far to allow the air to freely pass around it. In order to form an absolutely tight joint, when the parts are in their normal position, as shown in Fig. 1, a packing 20 may be placed around the end of the tube 6 outside of the valve 7, as shown. This packing 20 is not absolutely necessary, for the valve 7 upon its seat 4 forms an air-tight joint. The seat 4 may be formed of rubber or any other suit-

able material which will answer the purpose. As the valve 7 is formed as a part of the tube 6, the valve-seat 4 is preferably made of rubber. The packing 20 also serves to assist the valve in centering itself upon its seat, as the packing is placed upon the tube 6 and always moves therewith.

Should one of the parts of the coupling not be provided with the protruding end 8, the face of the opposing coupling will strike against the rod or arm 9 and force the valve 7 open and hold it so, so that air can freely pass through. The rod or arm 9 is made very thin, and as it extends across the opening which is closed by the packing 20 only on one side and does not come actually in contact with the under side of the valve-seat it does not obstruct the free passage of the air from one part of the coupling to the other. The valve is made removable from the tube, and the valve-seat is made removable from the casing, so that should either one of the parts become injured or get out of order it can be readily replaced. Inside of the tube 6 is placed the large spring 12, which holds the valve 7 tightly against the valve-seat 4, and through the tube is made any suitable number of holes 13, through which the air freely passes, when the valve 7 is closed, toward the spring-actuated valve 14, so as to escape when the pressure exceeds a certain regulated degree. The larger stationary portion of the tube 5, connected with the cap, is just sufficiently large to allow the end of the tube 6 to close into it, and when the valve is opened to its full extent the openings 13 are closed by the pipe 5, so as to shut off the air-pressure from the small valve 14.

In the pipe 5 is placed the valve-seat 15, against which the valve 14 closes, and which valve is held normally closed by the spring 16. Around the center of the cap is a suitable number of openings 17, through which the air passes which escapes through the valve 14.

By removing the cap 2 and detaching the rod or arm 9 by the removal of the holding-screw all of the removable parts can be gotten at for the purpose of repair, so that should any of the portions become injured or worn out they can be instantly replaced by others. When the valve 7 is opened, the air-pressure is shut off from the valve 14, and when the

valve 7 is closed the air passes through the openings 13, and if the pressure is sufficiently great it can open the valve 14, and thus relieve the pressure upon the hose.

By means of our construction the valve is dust and moisture proof under all circumstances.

Having thus described our invention, we claim—

1. An air-brake coupling provided with an automatic relief-valve, from which the pressure of the air is shut off when the main valve is opened, substantially as described.

2. An air-brake coupling, each part of which is provided with a main valve for controlling the passage of air from one part of the coupling to the other, combined with an automatically-acting relief-valve from which the pressure is shut off when the main valves are opened, substantially as set forth.

3. In an air-brake coupling, a spring-actuated valve placed upon an endwise-moving perforated tube, combined with a stationary tube into which the movable tube closes, and an automatic relief-valve placed in the stationary tube, substantially as specified.

4. In an air-brake, an endwise-moving tube carrying a valve, and a valve-seat, combined with the rod or arm attached to the outer projecting end of the tube, and the guide for the outer end of the rod or arm, substantially as shown.

5. In a coupling for an air-brake valve, a removable cap provided with a stationary inwardly-projecting tube, and an automatic relief-valve placed in said tube, combined with an endwise-moving perforated tube, a spring for actuating the movable tube, a valve secured to the tube, a valve-seat applied to the casing, and a rod or arm projecting from the outer projecting end of the movable tube, the parts being arranged to operate so that when the main valve is opened, the air-pressure is shut off from the relief-valve, and vice versa, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES ^{his} × McDOUGALL.
JOHN ^{mark} PERRIE.

Witnesses:

F. HOWARD MASON,
IDA FEE THOMER.