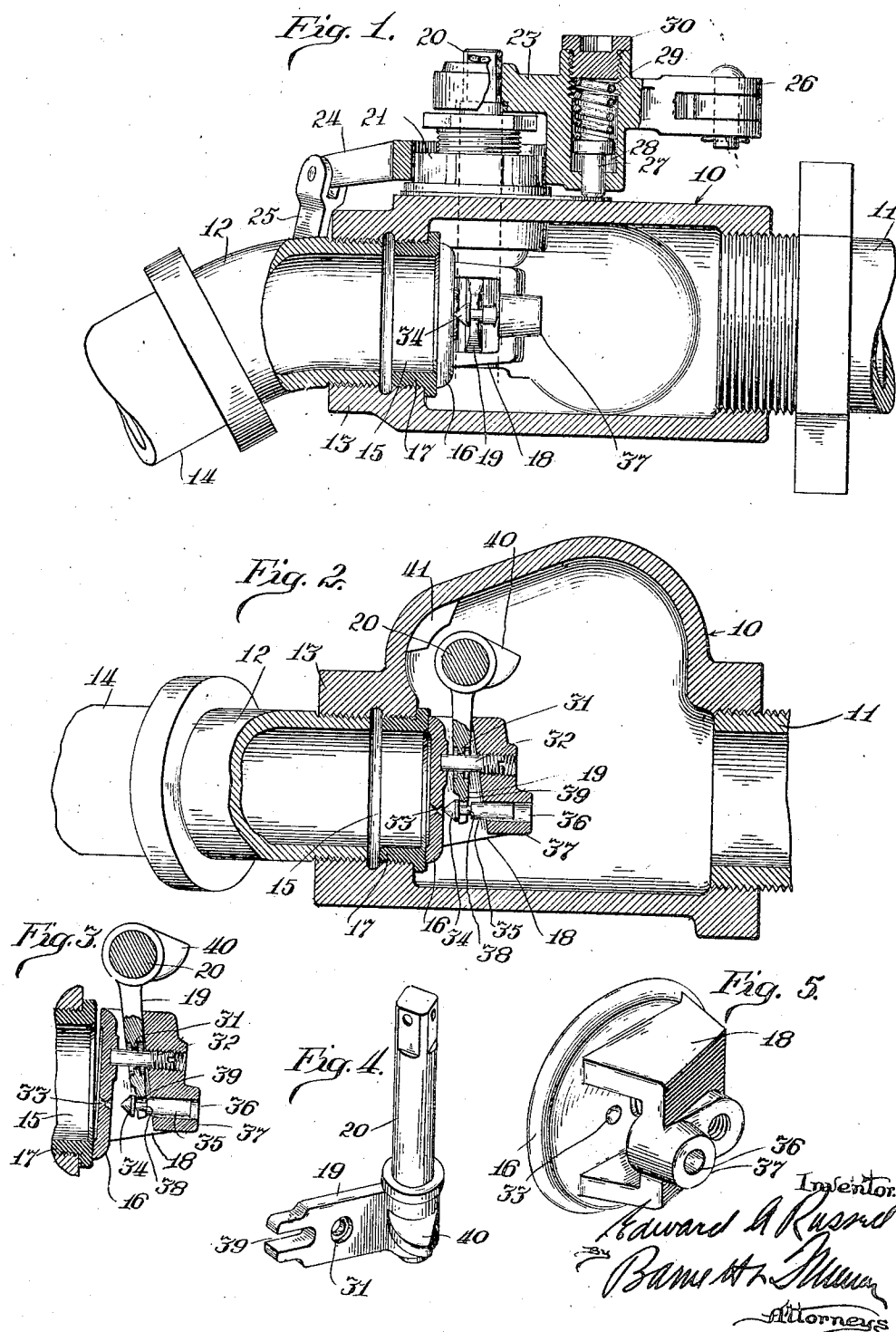


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E. A. RUSSELL
 TRAIN PIPE END VALVE
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UNITED STATES PATENT OFFICE.

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TRAIN-PIPE END VALVE.

Application filed August 13, 1921. Serial No. 492,075.

To all whom it may concern:

Be it known that I, EDWARD A. RUSSELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Train-Pipe End Valves, of which the following is a specification.

My invention relates to a train pipe end valve comprising a disc to cover the control port which is suspended upon a rock arm on the pressure side of said port. A valve of this type is frequently employed at each end of the steam train pipe of a passenger or other railway car requiring artificial heating in cold weather. Since the valve must, in such case, be opened against the pressure of the steam, and this pressure may be considerable, especially if the port be of relatively large diameter, some difficulty is experienced with these valves as heretofore constructed, in moving the valve from its seat. With this defect in view, the object of my invention is to provide a train pipe end valve of improved construction whereby, in the first place, the rock arm, when its spindle is rotated, is brought to bear first against one edge of the valve disc so as to force that edge from the seat, tilting the valve and thus partly opening the port to the flow of steam before the valve disc is moved as a whole to its fully opened position; and whereby, in the second place, the initial bearing as between the rock arm and disc or valve body is at a point as near as possible to the fulcrum of the rock arm so as to increase the leverage of the arm against the valve when the initial movement of the valve is made, that is to say, when the maximum steam pressure has to be overcome.

The invention is illustrated, in a preferred embodiment, in the accompanying drawings wherein—

Fig. 1 is a longitudinal sectional view of a train pipe end valve constructed in accordance with my invention.

Fig. 2 is a sectional plan view of the device.

Fig. 3 is a fragmentary plan view on the same plane as Fig. 2, illustrating the manner in which the valve is unseated.

Fig. 4 is a view, in perspective, of the lever or rock arm for operating the valve and its spindle, and

Fig. 5 is a view, in perspective, of the valve body or disc.

Referring to the drawing, 10 designates the casing of the valve and 11 the train pipe to the end of which the casing is attached. 12 is a nipple screwed into a threaded boss 13 on the casing. 14 designates a hose attached to nipple 12, to the other end of which is ordinarily fastened a hose coupler (not shown).

The outlet port 15 through boss 13 is closed by a valve disc 16 adapted to seat against a bushing 17. The valve disc is formed on the back with a housing 18. Into the space between the disc and housing 18 projects a lever or rock arm 19 fast to a spindle 20 revolvably mounted in a gland 21 secured in the top of casing 10. The end of spindle 20 projects beyond the casing and gland and has attached thereto an operating member 23 formed with a handle 24, the latter being preferably provided with a pivoted extension piece 25. The operating member may also be formed with a fork 26 for a pull rod. The operating member 23 is preferably provided with a latch pin 27 arranged in a recess 28 in said member, the pin being backed by a coil spring 29 bearing against a screw plug 30.

The rock arm 19 is formed with a perforation 31 through which projects, loosely, a stud 32 fixed in housing 18, the inner end of this stud seating in a recess in the back of the valve disc. The latter is preferably formed with a bleeding port 33 which is controlled by a small valve 34, the stem 35 of which extends into a bore 36 formed in a boss 37 on the housing 18. The stem 35 of the valve is reduced in diameter at 38 and engaged by a fork 39 on the rock arm 19. The backward movement of the arm and valve is limited by stop lugs 40 and 41 on the rock arm and casing.

Operation: Fig. 2 shows the valve in closed position with the bleeding port 33 open. If it is desired to close the bleeding port this may be done by moving the rock arm slightly to the left. In order to open the valve, rock arm 19 is moved to the right by the rotation of operating member 23. The inner surface of the web 42 of housing 18 is inclined inwardly in the direction toward the axis of rotation of the rock arm so that the rock arm first comes into contact with the housing at the edge 43 thereof, that is, at

the edge of the housing nearest to the axis of spindle 20. The result of this is that the valve is rocked on its seat, as shown in Fig. 3, so as to be opened on one side. As the distance between point 43 and the axis of spindle 20 is relatively short the leverage exerted against the valve is considerable, making it possible to partially open the valve to relieve steam pressure against the same even when that pressure is considerable. The bodily movement of the valve as a whole from its seat is easily accomplished after the valve has been tilted to the position shown in Fig. 3. The movement of the rock arm is ordinarily continued until stop 40 abuts against stop 41. The locking pin 27 holds the valve in the open position.

I claim:

1. In a train pipe end valve, the combination of a casing having inlet and outlet ports, a valve disc within the casing adapted to be seated over said outlet port, and a spindle pivoted in the casing at one side of said port provided with a rock arm adapted, when said spindle is rotated, to first engage the edge of the valve disc adjacent said spindle and tilt the valve disc on this side away from its seated position, and thereafter swing the disc as a whole away from said port.

2. In a train pipe end valve, the combination of a casing having inlet and outlet

ports, a valve body in said casing adapted to seat over said outlet port and provided with a diametrically arranged member spaced from the back of said body, and a rock arm which extends between said valve body and the member thereon, the inner face of said member being inclined toward the face of the valve body and toward the axis of rotation of the rock arm.

3. In a train pipe end valve, the combination of a casing having inlet and outlet ports, a valve body in said casing adapted to seat over said outlet port and formed on the back with a housing, and a spindle journaled in the casing at one side of said outlet port provided with a rock arm adapted to extend into said housing, the housing being formed so that when the rock arm is moved to open the valve it first engages the edge of the housing nearest the axis of rotation of said spindle to tilt the valve on this side away from its seat.

4. In a train pipe end valve, the combination of a valve disc and a lever to move the disc away from the port which it controls, which lever is fulcrumed at one side of said valve and is adapted, when moved to open the valve, to first engage the edge of the valve nearest to the fulcrum of the lever, for the purpose described.

EDWARD A. RUSSELL.