No. 817,294. PATENTED APR. 10, 1906.

S. ANDERSON.

DRAIN COCK FOR STEAM CYLINDERS.

APPLICATION FILED OCT. 2, 1905.

Fig. 1.

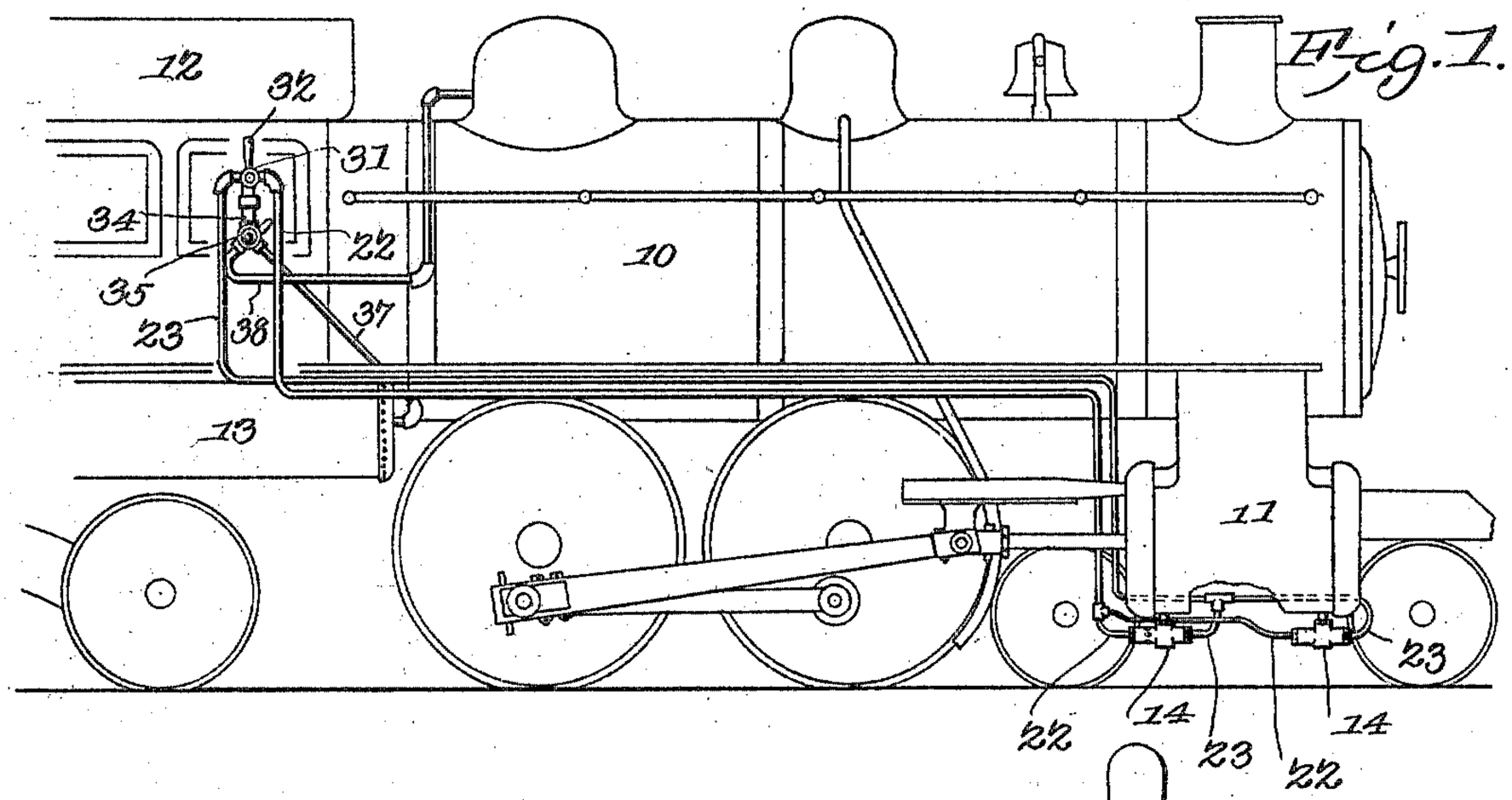

Fig. 4.

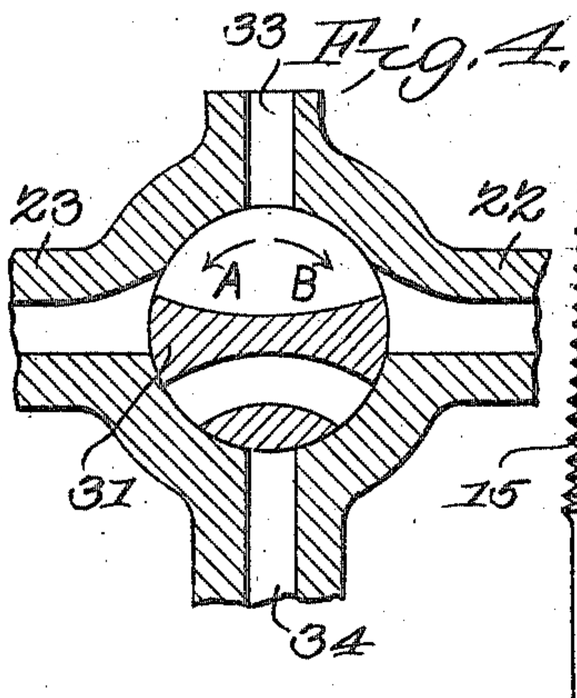

Fig. 3.

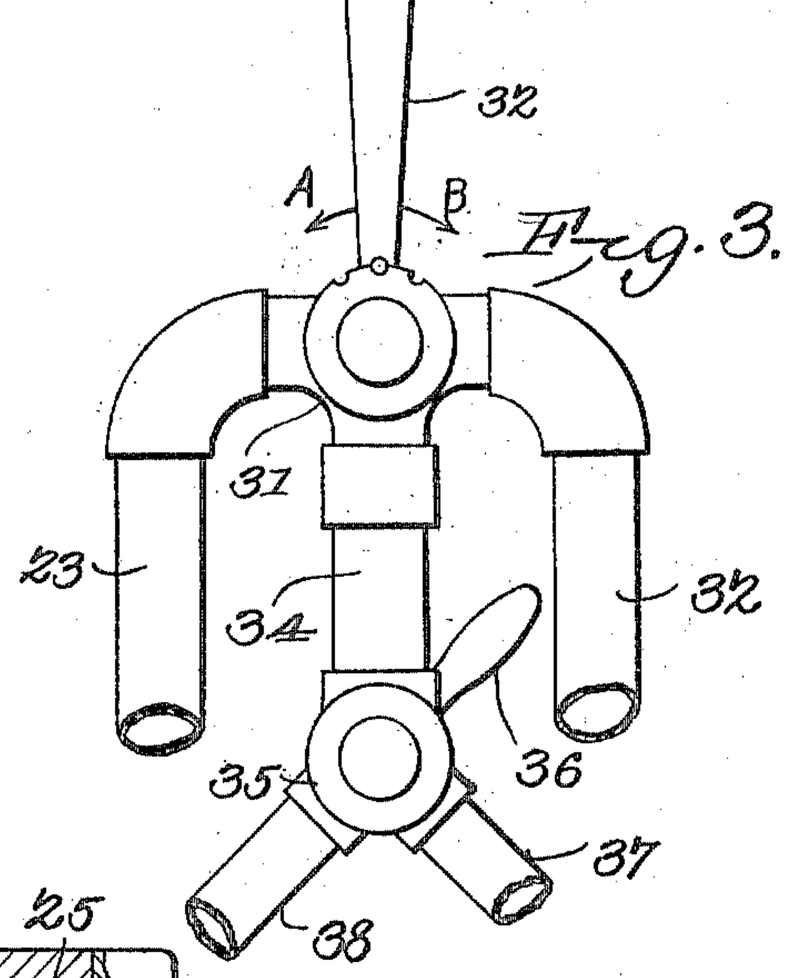

Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

SWAN ANDERSON, OF OTTUMWA, IOWA, ASSIGNOR OF ONE-SIXTH TO ISAAC N. FUNK AND ONE-SIXTH TO WILLIAM A. KELLY, OF OTTUMWA, IOWA, AND ONE-SIXTH TO JOSEPH B. ROACH, OF AURORA, ILLINOIS.

DRAIN-COCK FOR STEAM-CYLINDERS.

No. 817,294. Specification of Letters Patent. Patented April 10, 1906.

Application filed October 2, 1905. Serial No. 281,044.

To all whom it may concern:

Be it known that I, SWAN ANDERSON, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented a new and useful Drain-Cock for Steam-Cylinders, of which the following is a specification.

This invention relates to drain-cocks for steam-cylinders, and has for an object to provide a device of the class embodying new and improved features of durability, simplicity, utility, and efficiency.

A further object of the invention is to provide an improved form of drain-cock which may be used in association with stationary, portable, marine, or locomotive engines and to be operated selectively by steam from the boiler, compressed air from the storage-tank, or other fluid under pressure from any convenient source.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made without departing from the spirit or sacrificing any of the advantages of this invention.

In the drawings, Figure 1 is a view in side elevation of the improved drain-cock and associated operating parts applied to a conventional locomotive. Fig. 2 is a detail longitudinal sectional view of the improved drain-cock disconnected. Fig. 3 is a view in side elevation of the engineer's valve for operating the cock. Fig. 4 is a detail sectional view of the four-way valve forming a part of the engineer's valve.

Like characters of reference indicate corresponding parts in all of the figures of the drawings.

The improved cylinder drain-cock and its operating means forming the subject-matter of this application is here shown as applied to a conventional locomotive; but it is to be understood that it may with equally satisfactory results be applied to the steam-cylinders of other engines.

As illustrated, 10 designates a locomotive having a cylinder 11 shown and of course a similar cylinder, (not seen,) a cab 12, and a compressed-air reservoir 13.

The drain-cock proper in its preferred embodiment comprises a casing 14, having a screw-threaded tubular shank 15 for connection with the cylinder, as 11. The casing is bored at right angles to the shank to form the cylinder 16, having a valve-seat 17 at its inner end and one or more exhaust-apertures 18 piercing the walls. At the end opposite the cylinder 16 the casing is provided with a larger and coaxial bore 19, internally screw-threaded to receive the plug 20. The screw-plug 20 is concentrically bored to form the cylinder 21, alined with and opposed to the cylinder 16. The casing is provided with a pipe, as 22, communicating with the outer end of cylinder 16, and the plug 20 is provided with a similar pipe 23, communicating with the cylinder 21.

Within the casing is disposed a member comprising the piston 24, mounted to reciprocate within the cylinder 16, the alined piston 25 within the cylinder 21, and the valve 26, carried between the pistons and positioned and proportioned to coöperate with the valve, seat 17 and close the cylinder 16. The connection between the piston 24 and the valve 26 must be reduced, as at 27, and the pistons 24 and 25 are provided, respectively, with the usual packing-rings, (indicated at 28 and 29.) The plug 20 is provided with a drain-opening 30, communicating with the cylinder 21 and disposed adjacent the end of the piston 25 at the extreme of its inward movement.

The pipes 22 and 23 from the several drain-cocks and several cylinders join in the usual well-known manner and lead by any approved course to a point convenient to the hand of the engineer, as into the cab 12, where they join at a four-way valve 31, operated in any approved manner, as by the lever 32. The valve 31 is provided with an exhaust-port 33 and a pipe 34, leading to the three-way valve 35, of the usual and ordinary construction. The valve 35 is operated in any convenient manner, as by the lever 36, and is provided with pipes 37 and 38, either one of which may be connected with the boiler steam-pressure and the other with the air-reservoir 13.

With the parts assembled as shown the valve 26 closes the inner end of the cylinder 16 and cuts off the escape of steam or moisture from the cylinder 11. With the handle 36 disposed as shown it will be assumed that the four-way valve 31 is in communication with the air-reservoir 13. To open the valve 26, the lever 32 is moved in the direction of arrow A, thereby admitting air from the pipe 34 to the pipe 22 and against the piston 24. The valve being opened, the lever 32 is returned to the position shown, cutting off pipe 34 and permitting the air in cylinder 16 to exhaust. When the valve 26 is to close, a movement in the direction indicated by arrow B admits air to pipe 23 and cylinder 21 with the reverse result. Any steam which may pass valve 26 will exhaust through the openings 18, and any leakage around piston 25 may condense in cylinder 21 and pass off through drain 30. By a movement of the lever 36 the air is shut off from the four-way valve and steam from the boiler applied, which operates in the same manner as the compressed air.

Having thus described the invention, what is claimed is—

1. A cylinder drain-cock including a casing provided with draining-openings and having a valve-seat in advance of said openings, a direct seating-valve arranged to close against the seat and there held in part by the pressure of the piston-actuating fluid in the cylinder, said casing being provided, also, with a pair of alining cylinders, pistons arranged in said cylinders and connected to the valve, and valved connections leading to said cylinders to permit the operation of either piston and the opening or closing of the valve.

2. A cylinder drain-cock comprising a casing including a pair of alined cylinders, said casing being provided with drain-openings and having a valve-seat in advance of said openings, a pair of pistons arranged in the cylinders, a stem connecting the pistons, a direct seating-valve carried by the stem and arranged to be held to its seat in part by the pressure of the piston-actuating fluid in the cylinder, and valved connections leading to the cylinders to permit operation of either piston and the opening or closing of the valve.

3. The combination with a source of steam-supply and a source of compressed-air supply, of a drain-cock provided with opposed and alined cylinders and an inlet communicating with the cylinders one of said cylinders being provided with an exhaust-aperture and with a valve-seat at its inner end, a valve proportioned to close the end of the cylinder and the exhaust-aperture and carrying alined pistons, movable within the cylinders and to open and close the valve, and means to selectively admit steam or compressed air to either cylinder to move the valve in either direction.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

SWAN ANDERSON.

Witnesses:
HERMAN T. SCHMIDT,
G. P. KITTERMAN.