J. P. GRAY.

CYLINDER COCK.

APPLICATION FILED SEPT. 14, 1916.

1,225,238.

Patented May 8, 1917.

Fig. 1.

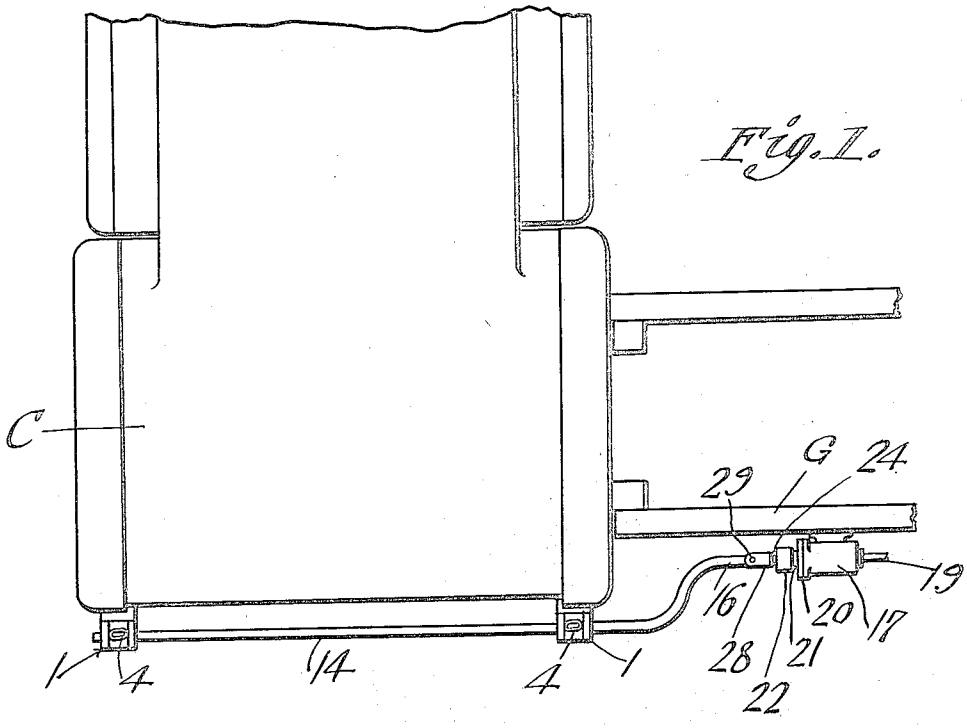



Fig. 2.

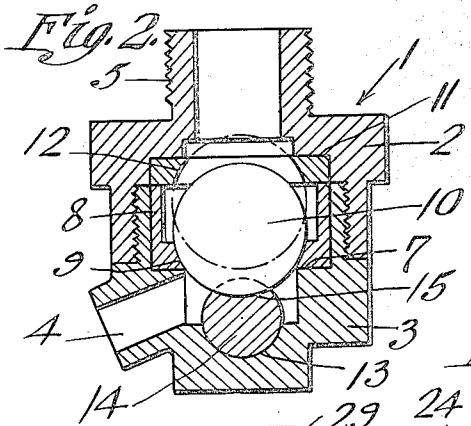



Fig. 3.

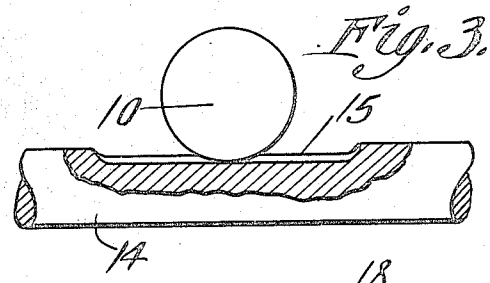
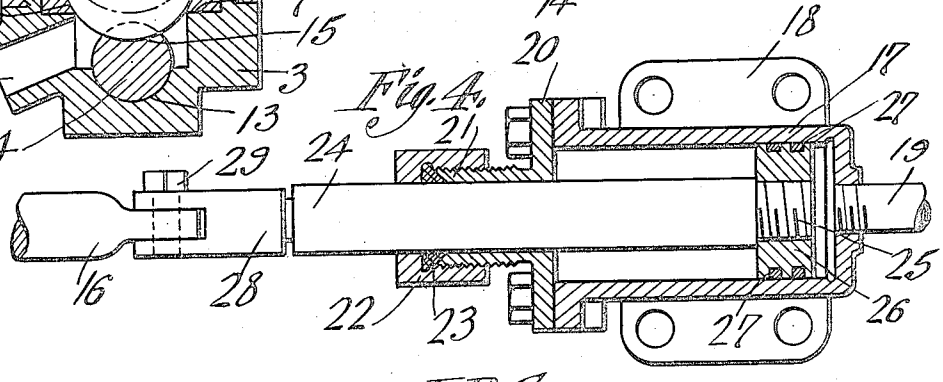



Fig. 4.




Witnesses

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# UNITED STATES PATENT OFFICE.

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## CYLINDER-COCK.

1,225,238. Specification of Letters Patent. Patented May 8, 1917.

Application filed September 14, 1916. Serial No. 120,155.

*To all whom it may concern:*

Be it known that I, JOSEPH P. GRAY, a citizen of the United States, residing at Pittsburg, in the county of Crawford and State of Kansas, have invented a new and useful Cylinder-Cock, of which the following is a specification.

The present invention relates to drain cocks for the cylinders of locomotive and other steam engines, and is particularly an improvement or variation over the cylinder cock disclosed in my Patent No. 1,206,216 granted November 28, 1916.

It is the object of the invention to provide a novel and improved cylinder cock having improved details of construction to enhance the utility of efficiency thereof.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a side elevation of the device as applied to the cylinder of a locomotive.

Fig. 2 is a median section of one of the cylinder cocks.

Fig. 3 is a fragmental elevation illustrating the valve unseating rod.

Fig. 4 is a sectional view illustrating the pressure fluid cylinder and piston.

As illustrated, the cylinder C is provided adjacent to each end with one of the depending drain cocks 1 each of which embodies a casing composed of upper and lower sections 2 and 3, respectively. The section 3 is of cup-shape and the section 2 is cap-shaped, and is threaded upon the rim of section 3 whereby the rims of the two sections are overlapped and detachably connected for convenience in assembling and separating said sections. The lower section 3 is provided at any suitable point below the section 2 with an outlet 4 and the section 2 is provided with upstanding nipple 5 which is attached to the cylinder, so that any water within the cylinder will flow downwardly into the valve casing. The interior of the section 3 is double diametered with the larger diametered portion uppermost, thus providing an upwardly facing shoulder or ledge 7. The outlet 4 communicates with the smaller diametered portion below the shoulder 7 and a sleeve or ring 8 of suitable metal is fitted removably within the larger diametered portion of the section 3 to provide a lining therefor, and is provided at its lower end with an inturned annular flange 9 seated upon the shoulder 7 and forming a seat for a ball valve 10. The valve 10 is of slightly smaller diameter than the interior of the ring 8, and the flange is beveled or curved slightly to accommodate the valve. The upper edge of the ring 8 is flush with the upper edge of the section 3 whereby the section 2 seats upon the upper edge of the ring to hold it snugly in place. The section 2 is provided with a lower inner recess 11 at the base of the nipple 5 receiving an annular removable valve seat 12 of suitable metal, which seats upon the upper edge of the ring 8, whereby the ring 8 and valve seat 12 hold one another in place. The valve seat 12 is provided with a bevel against which the valve 10 is seatable upwardly to prevent air being sucked into the cylinder should a partial vacuum be formed therein by the condensation of steam.

The lower sections 3 of the two valve casings are each provided with a diametrical bore 13 extending therethrough with its axis slightly above or adjacent to the upper surface of the bottom of the section 3 to provide a channel extending across the bottom of said section. The bores 13 of the two casings are in alinement, and a rod 14 is slidable through said bores and is provided within each valve casing with an upper longitudinal recess 15 concaved transversely to accommodate the valve 10 and having its ends curved to provide cams for forcing said valve upwardly to unseat it. Thus, when the rod 14 is in one position, the valves 10 can drop into the recesses 15 to seat upon their seats 9, and when the rod is slid longitudinally it will unseat said valves to permit the condensate to drain out of the cylinder.

The rear end of the rod 16 is offset upwardly into alinement with a longitudinal small supplementary cylinder 17 having the upper flanges 18 bolted or otherwise fastened to the lower face of the cross head guide G. That end of the cylinder 17 remote from the cylinder C is closed and has a pressure fluid supply pipe 19 connected

thereto for conducting steam or other pressure fluid into the cylinder 17, the flow of steam being controlled by a valve within reach of the engineer or operator. The other end of the cylinder 17 is open and has attached thereto a head 20 provided with an outstanding collar 21 upon which a gland nut 22 is threaded to compress the packing 23 against the piston rod 24 which is slidable through the collar 21 and head 20. That end of the piston rod within the cylinder is reduced, as at 25, and has threaded or otherwise secured thereon a piston 26 working within the cylinder and having packing rings 27 to prevent leakage. A coupling member 28 is attached in any suitable manner to the outer end of the piston rod 24 and is bifurcated to receive the upwardly offset end 16 of the valve unseating rod, said end of the rod being pivoted, as at 29 within the member 28. The cylinder 17, terminal 16 of the rod 14 and corresponding parts being offset upwardly brings them snugly below the crosshead guide G out of the way, and this also prevents the rod 14 and piston rod 24 from turning about their axes, whereby the valve unseating rod is maintained in proper position.

When pressure fluid is admitted into the cylinder 17 it forces the piston 26 and its rod 24 forwardly toward the cylinder C, thereby pushing the rod 14 ahead of the piston rod to unseat the valves 10 whereby the water is drained from the cylinder C. When the pressure fluid is withdrawn, the parts are returned to initial position and the valves 10 are again permitted to seat for preventing the escape of steam.

Having thus described the invention, what is claimed as new is:

1. A drain cock embodying a casing comprising a pair of detachably connected sections, valve seat members fitted within said sections and holding each other in place, a ball valve within the casing and movable between said members and seatable against either of them, and means for unseating said valve from one of said members.

2. A drain cock embodying a casing comprising a lower cup-shaped section and an upper cap-shaped section having its rim fitted detachably upon the rim of the lower section, the lower section having an upwardly facing shoulder and an outlet below said shoulder, the upper section having an inlet and a recess below said inlet, a ring fitted within the lower section and having its lower edge provided with an inturned flange seating upon said shoulder and providing a valve seat, an annular valve seat fitting within the recess of the upper section and seating upon the upper edge of said ring, a ball valve within said ring and movable between and seatable against either of said valve seats, and means for raising the valve from the first mentioned valve seat.

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

JOSEPH. P. GRAY.

Witnesses:
W. M. LINDSAY,
H. C. BEST.