

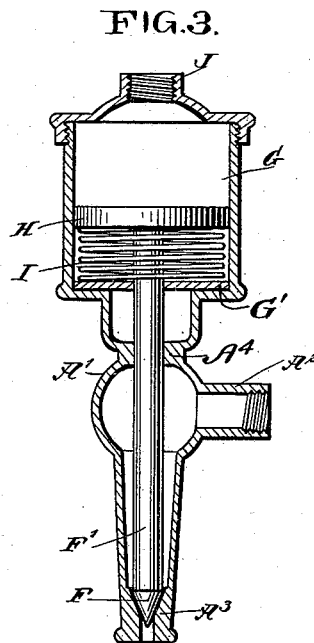
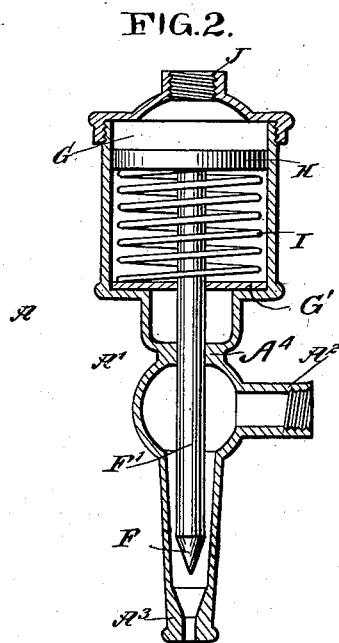
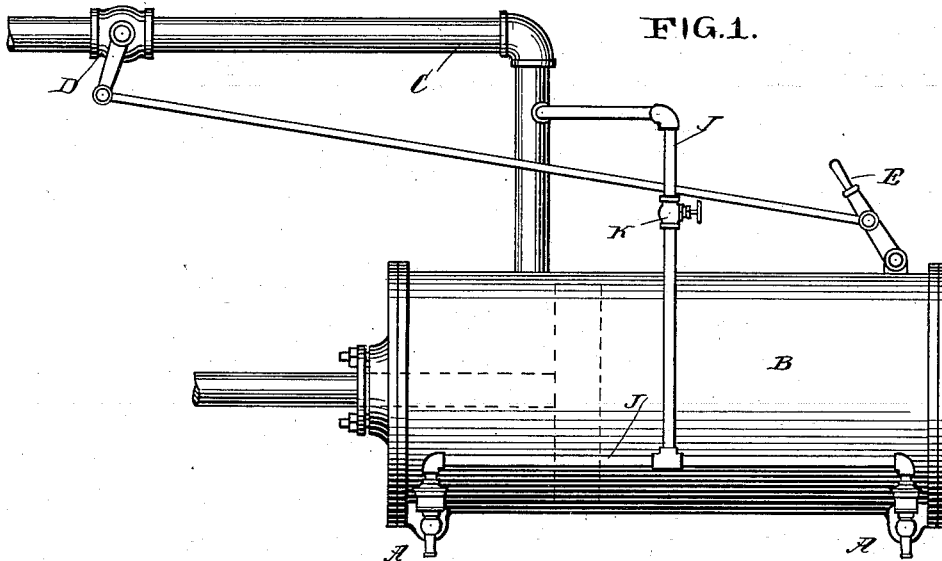
No. 650,263.

Patented May 22, 1900.

L. M. MORROW.  
AUTOMATIC CYLINDER COCK.

(Application filed Aug. 11, 1899.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

LOUIS MONROE MORROW, OF WASCO, OREGON.

## AUTOMATIC CYLINDER-COCK.

SPECIFICATION forming part of Letters Patent No. 650,263, dated May 22, 1900.

Application filed August 11, 1899. Serial No. 726,900. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS MONROE MORROW, of Wasco, in the county of Sherman and State of Oregon, have invented a new and  
5 Improved Automatic Cylinder-Cock, of which the following is a full, clear, and exact description.

The invention relates to engines; and its object is to provide a new and improved cock  
10 more especially designed for use on steam-engine cylinders and arranged to automatically open for the discharge of the water of condensation to prevent blowing out of the cylinder-head or bending of the piston-rod  
15 at the time the engine is started and the engineer fails to open the usual cylinder-cocks.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed  
20 out in the claim.

A practical embodiment of my invention is represented in the accompanying drawings, forming a part of this specification, in which  
25 similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied. Fig. 2 is an enlarged transverse section of the improvement, and Fig. 3 is a like view of the same with parts in a  
30 different position.

As illustrated in Fig. 1, the two cylinder-cocks A are arranged on the ends of the cylinder B, at the bottom thereof, the cylinder being connected by a pipe C with the boiler  
35 or other steam-supply, and in the pipe C is arranged the usual throttle-valve D, under the control of the engineer by means of a lever E.

The cylinder-cocks A are alike in construction, and each is provided with a body A', having a connection A<sup>2</sup> with the cylinder and an outlet or discharge A<sup>3</sup> for allowing the water of condensation to flow from the cylinder B by way of the connection A<sup>2</sup> and the  
45 outlet A<sup>3</sup> to the outside of the cylinder. The outlet A<sup>3</sup> is formed with a valve-seat adapted to be engaged by a valve F, the stem F' of which extends through the body A' into a cylinder G, containing a piston H, secured on  
50 the stem F', said valve F being normally held off its seat by a spring I, pressing on the under side of the piston H, contained in the cylinder

G. It will be observed that the stem F' passes through a bearing or stuffing-box A<sup>4</sup> between the piston H and the connection A<sup>2</sup>, preventing the access of steam to the spring I. At the bottom of the cylinder G is further located a plate or washer G', which likewise serves to prevent the steam from reaching the  
60 spring I. The top of the cylinder G is connected with a steam-pipe J, leading to the supply-pipe C between the cylinder B and the throttle-valve D, and in the pipe J is arranged a valve K for regulating the amount of steam passing from the supply-pipe C by way of the  
65 pipe J to the cylinders G of the two cocks A.

When the engine is not running—that is, when the valve D is closed and the steam is shut off from the cylinder B—then the springs I in the cylinders G of the cocks A hold the  
70 valves in an uppermost position—that is, with the valves F off the seats in the outlets A<sup>3</sup>—so that the interior of the cylinder is in direct communication with the outside, and any water of condensation in the cylinder can  
75 readily flow from the latter to the outside by way of the connections A<sup>2</sup> and the outlets A<sup>3</sup>, as previously explained.

When the valve D is opened to start the engine and while the engine is running, steam  
80 passes from the pipe C by way of the pipe J to the two cylinders G to press on the pistons H thereof and force the same downward against the tension of the springs I and to cause the valves F to be seated in the seats  
85 of the outlets A<sup>3</sup>, so that the cylinder-cocks are closed and the interior of the cylinder is disconnected from the outside by way of the connections A<sup>2</sup> and the outlets A<sup>3</sup>. The valves F remain closed during the time the engine  
90 is running; but as soon as the valve D is closed and steam is shut off from the cylinder B then steam is also cut off from the pipe J and the cylinders G, and consequently the springs I will at once return the valves to  
95 their uppermost normal positions, so that the valves F move off the seats in the outlets A<sup>3</sup>, and consequently connection is again established between the interior of the cylinder and the outside, so that any water of condensation in the cylinder B can readily flow to  
100 the outside, so as to completely drain the cylinder at both ends.

The device is very simple and durable in

construction, is completely automatic in operation, and is arranged in such a manner that the water of condensation will be readily discharged as soon as the engine ceases to run. By regulating the valve K more or less steam can be admitted to the cylinders G of the cocks A, so that the valves F do not close until the engine is running at about the desired speed, or the valve K can be set so that the valves F close as soon as steam is admitted to the cylinder B. It is understood, however, that as soon as the throttle-valve D is closed the valves F immediately open to drain the cylinder-cocks A, as described.

When it is desired to drain the cylinder while the engine is running, it is only necessary for the engineer to completely close the valve K, so as to shut off the steam from the cylinders C to allow the valves to open. As soon as the cylinder is drained of any water of condensation the engineer again opens the valve K to cause the valves F to be seated, as above explained.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

A cylinder-cock comprising a casing having a port adapted for connection with the steam-supply, another port for connection with the cylinder, and a third port for the outlet of condensation-water, a piston movable in said casing, a valve and valve-stem rigidly connected with the piston, said valve controlling the outflow of condensation-water, a spring coiled around the valve-stem on the opposite side of the piston to the supply-port, a washer located on the valve-stem in the piston-chamber of the casing between the spring and the cylinder-port, and a stuffing-box through which passes said stem between the washer and the cylinder-port.

LOUIS MONROE MORROW.

Witnesses:

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