No. 698,483. Patented Apr. 29, 1902.

G. FAITH & T. HOOK.

DRAIN VALVE FOR CYLINDERS.

(Application filed June 1, 1901.)

(No Model.)

Fig. 1.

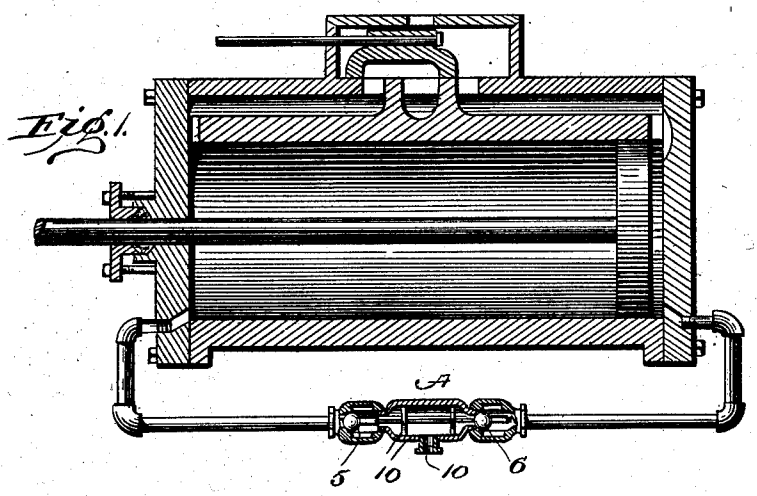


Fig. 2.

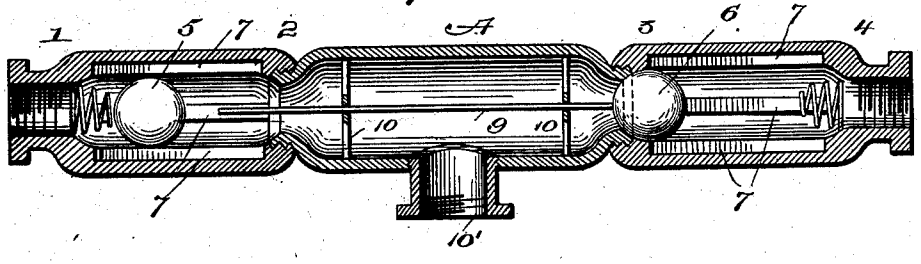
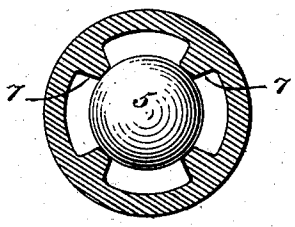


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE FAITH AND THOMAS HOOK, OF INDIANA, PENNSYLVANIA.

DRAIN-VALVE FOR CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 698,483, dated April 29, 1902.

Application filed June 1, 1901. Serial No. 62,776. (No model.)

To all whom it may concern:

Be it known that we, GEORGE FAITH and THOMAS HOOK, citizens of the United States, residing at Indiana, in the county of Indiana and State of Pennsylvania, have invented a new and useful Improvement in Drain-Valves for Cylinders, of which the following is a specification.

Our invention relates to an improvement in drain-valves for cylinders.

In all steam-engine cylinders it is necessary to drain off the condensed steam, or rather water, which gathers in them in order to give full life and power to the steam, or, in other words, to allow all the space for the full expansion of the steam, thereby giving it its original power and force. In these cylinders the condensed steam is constantly accumulating, and in order to displace the water it is necessary to open the petcocks frequently to drain the cylinder, and especially is this true before starting the engine, at a loss always of many moments of valuable time.

Our present invention prevents the accumulation of condensed steam in the cylinders of pumps, as well as steam-engines, thus saving power, and consequently steam, fuel, and attendance; and with these objects in consideration our invention consists in certain novel features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view showing our improved drain-valve applied to a cylinder. Fig. 2 is an enlarged longitudinal section of the valve mechanism, and Fig. 3 is cross-section.

A represents the valve-barrel, into the opposite ends of which drain-pipes lead from the outer ends of the cylinder. This barrel is preferably made in three sections screwed or otherwise joined together so that the ends 1, 2, 3, and 4 form seats for the ball-valves 5 and 6, confined in the two outer sections. The ball-valves are centered in their respective sections of the barrel by longitudinal ribs 7 7 in the bore of the sections, so that their movements back and forth are in a straight line or path from seat to seat. The ribs have also the further function of keeping the balls from contact with the water or dirt which would pass through the valve, thereby causing no resistance from either water or dirt.

Extending loosely between the two ball-valves is a rod or needle 9, it being supported loosely in the guides 10 10, so that it is always held in the direct path of the balls opposite their centers, where the direct impact of the balls endwise thereon will cause the rod or needle to slide or move endwise, one valve always displacing the other. In other words, when the piston moves outward, for instance, the condensed steam is forced through the drain into the barrel at the adjacent end, displacing the valve at the outer end, so that the water finds entrance into the barrel. The water flows through the channels made by the ribs, and any water in the path of the valve during its inward travel is swept by the valve into the central chamber or section of the barrel, flowing out through outlet 10 at the bottom. Rod 9 being forced forward ahead of the valve engages the opposite valve and displaces it, and the latter valve is forced inward by the next or return stroke of the piston, moving the rod or needle on ahead of it, displacing the valve at the right, and so on, each time causing a drainage of water from the end of the cylinder.

In the outer ends of the barrel coiled springs 12 12 may be placed, their function being to break the force of the balls in returning to the outer end of the barrel. Also they lessen the noise and wear of the balls. The springs may be dispensed with altogether, although we prefer to use them for the purposes mentioned.

From the foregoing it will be seen that we have devised a simple arrangement for accomplishing the purposes of the invention, which at the same time is most effectual and perfect in the performance of the functions sought.

It is evident that slight changes might be made in the form and arrangement of the several parts described without departing from the spirit and scope of our invention, and hence we do not wish to limit ourselves to the exact construction herein set forth; but,

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination with a valve-barrel having springs at the opposite ends thereof, of ball-valves in position to strike the springs, and a rod interposed between and in the path of the balls for always causing the displacement of one of the balls from its seat.

2. The combination with a valve-barrel made in sections secured together the ends of the inner section forming valve-seats, and the outer sections having longitudinal ribs in their bores and cushion devices at their outer ends, of ball-valves centered between the ribs, a rod independent of these valves and interposed between them and guides for holding the rod loosely centered in the direct longitudinal path of the valves.

3. The combination with a valve-barrel having two valve-seats, of two ball-valves entirely independent of each other, and a rod interposed loosely between the valves, the length of the rod being such that it must be struck with each seating of a ball-valve, and spiral springs located at the outer ends of the barrel.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

GEORGE FAITH.
THOMAS HOOK.

Witnesses:
J. A. FRICK,
JACOB WATTLING.