

M. B. MASON & J. S. McCRUM.
Improvement in Cylinder Cocks.

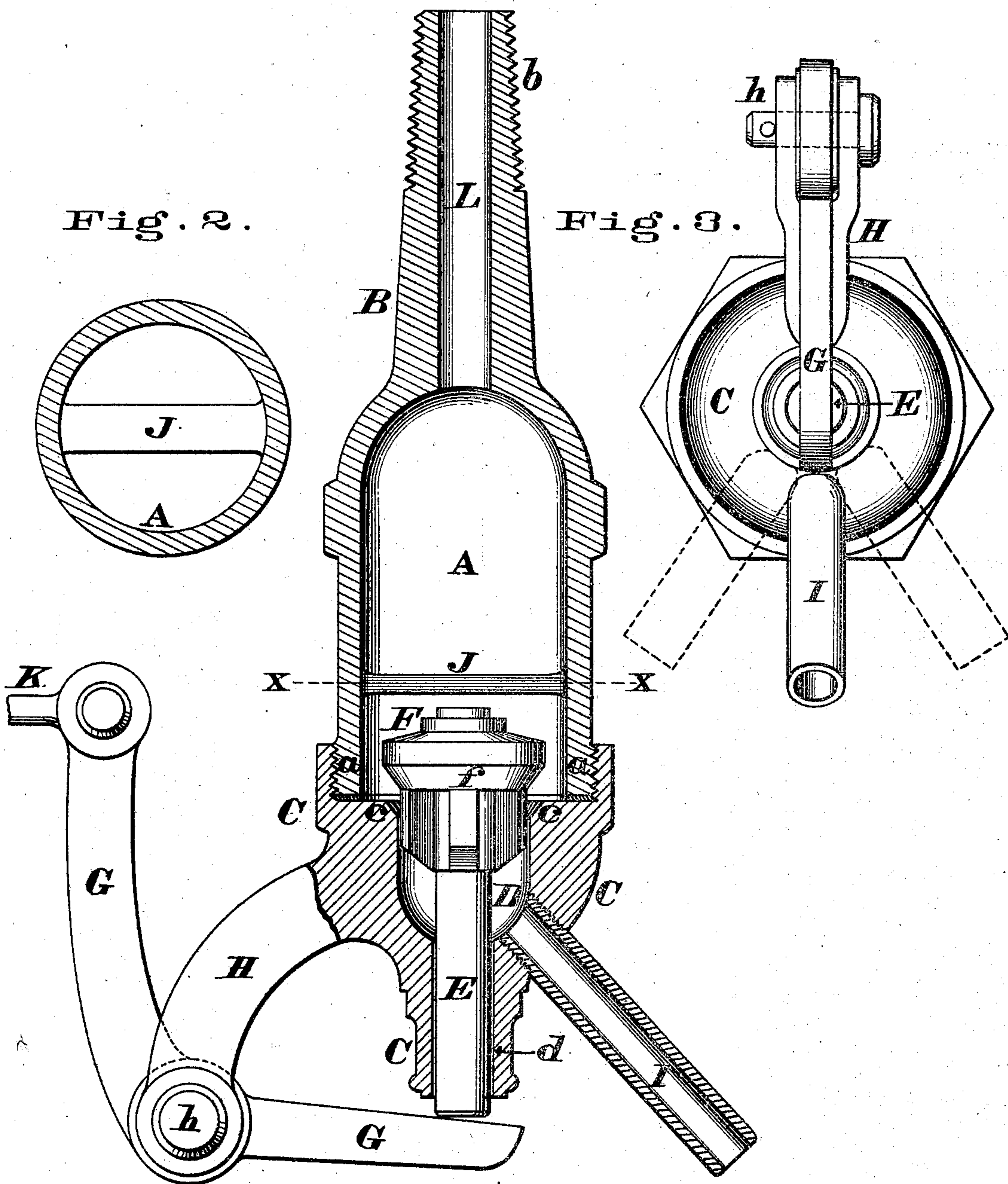
No. 120,080.

Patented Oct. 17, 1871.

Fig. 1.

Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE

MATTHEW B. MASON AND JOHN S. McCRUM, OF KANSAS CITY, MISSOURI.

IMPROVEMENT IN CYLINDER-COCKS.

Specification forming part of Letters Patent No. 120,080, dated October 17, 1871.

To all whom it may concern:

Be it known that we, MATTHEW B. MASON and JOHN S. McCRUM, both of Kansas City, Jackson county, Missouri, have invented an Improved Cylinder-Cock, of which the following is a specification:

Our invention relates to that class of devices which is employed for discharging the water of condensation from the cylinders of locomotive and other steam-engines; and our improvement consists in providing such devices with a poppet-valve, whose stem is operated in such a manner as to open said valve, by means of a bolt-crank, so as to allow the water to escape through a side or branch pipe; a suitable bridge or stop being provided in the barrel of the cock to limit the movement of the valve when lifted from its seat by the above-mentioned bell-crank.

Figure 1 is an axial section of a cylinder-cock embodying our improvements, the valve being shown as partially opened. Fig. 2 is a transverse section of the barrel at the line X X, and Fig. 3 is an elevation of the head of the device.

The principal member of the cock consists of a barrel, A, having a diminished portion or neck, B, the latter being screw-threaded at *b*, so as to engage either with the cylinder or cylinder-head. The enlarged end of this barrel has a screw-thread, *a*, with which is engaged a head, C, that is furnished with a valve-seat, *c*, a chamber, D, and an axial bore, *d*, which bore is coincident with the bore L of the neck. Traversing the bore *d* is the stem E of a spindle or poppet-valve, F, whose face *f* is ground so as to fit accurately the seat *c*, and said valve is furnished with wings that play within the chamber D. The valve is operated by a bell-crank, G, which is pivoted at *h* to a bracket or support, H, that projects from the head C. Screwed into the head C is a side or branch pipe, I, through which the water of condensation is discharged whenever the valve F is lifted from off its seat. Placed athwart the barrel A is a stop or bridge, J, which serves to limit the upward or opening movement of the valve. The bell-crank G is operated by a rod, K, which should extend back into the engineer's "cab" whenever

the cock is applied to the cylinder of a locomotive.

In its normal or closed position the valve F rests upon the seat *c* and is maintained securely in contact therewith by the pressure of steam in the cylinder, and whenever it is desired to discharge the water of condensation from the steam-cylinder the engineer has only to pull the rod K when the bell-crank G will open the valve F and allow the water to be ejected through branch pipe I. As soon as the water has been discharged the engineer quits his hold of rod K and the pressure of the steam immediately restores the valve to its normal or closed condition.

If at any time the valve should need regrinding it can be detached from the cock by simply unscrewing the head C, which is the work of but a few moments.

In the drawing the branch pipe I is shown as being situated in the same vertical plane as the bell-crank G; but it is evident that said pipe may be attached to the head in such a manner as to incline to the right or left, as shown by dotted lines in Fig. 3.

In case steam should be suddenly shut off when the engine is running at a high speed a vacuum would be produced in a cylinder provided with an ordinary plug-valve; but, under similar circumstances, our valve would instantly open, and, by admitting air at every stroke of the piston, destroy the vacuum, and thereby prevent the injurious cutting of the packing. This valve being besides much cheaper than the ordinary plug-cock, is also much more durable and will discharge the water of condensation more promptly.

We claim as our invention—

The combination, substantially as described, of the barrel A *b* L, detachable head C *c* *d*, valve E F *f*, support H, ridge or stop J, and operating bell-crank G, for the object stated.

In testimony of which invention we hereunto set our hands.

MATTHEW B. MASON.

Witnesses: JOHN S. McCRUM.

GEO. H. KNIGHT,

JOHN KILOH.

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